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STUDENT-RETENTION IN JUNIOR COLLEGES

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THE writer recently completed a study of student retention in thirty-six junior colleges distributed throughout the Middle West, the South, and the Far West. His attention was directed to the problem through the serious elimination of students enrolled in the first two years of four-year colleges and universities. Since there had been no scientific study of student retention within any considerable number of junior colleges, it was felt that such a research would make a valuable contribution.

Through the coöperation of the Research Committee of the American Association of Junior Colleges the efforts of the junior colleges participating in the study were enlisted. Data secured are based on three successive entering and graduating classes, the period covered by the study extending from September 1923 to June 1927. Participating colleges submitted lists of entering and graduating students, so that the retention figures referred to here are based on the actual checking of names; names appearing on lists of entering students were checked against lists of graduates two, three, or four years later. Retention data for three successive entering classes were secured in order to assure reliability of the percent of retention for each institution.

The brief resumé of data here presented falls under the following heads: (1) general extent of student retention in junior colleges, (2) percent of graduating students requiring longer than two years for completing the course, (3) relation of retention to delayed graduation, (4) students transferring to other institutions for the second year of work, (5) relation of type and location of junior college to student retention, and (6) continued education of junior college graduates.

Within the period from September 1923 to September 1925, 7737 students entered thirty-five junior colleges, 2812 or thirty-six percent of

whom finished the two-year course within the institutions of first matriculation. The institutions varied in retention, from nine to eighty-six percent, the median retention being thirty-six and five-tenths percent. One-fourth of the institutions are below twenty-five percent and one-fourth above forty-five percent in retention of students until graduation.

Of the total of 2812 junior college graduates of the three successive entering classes, 295 or ten and one-half percent, required longer than

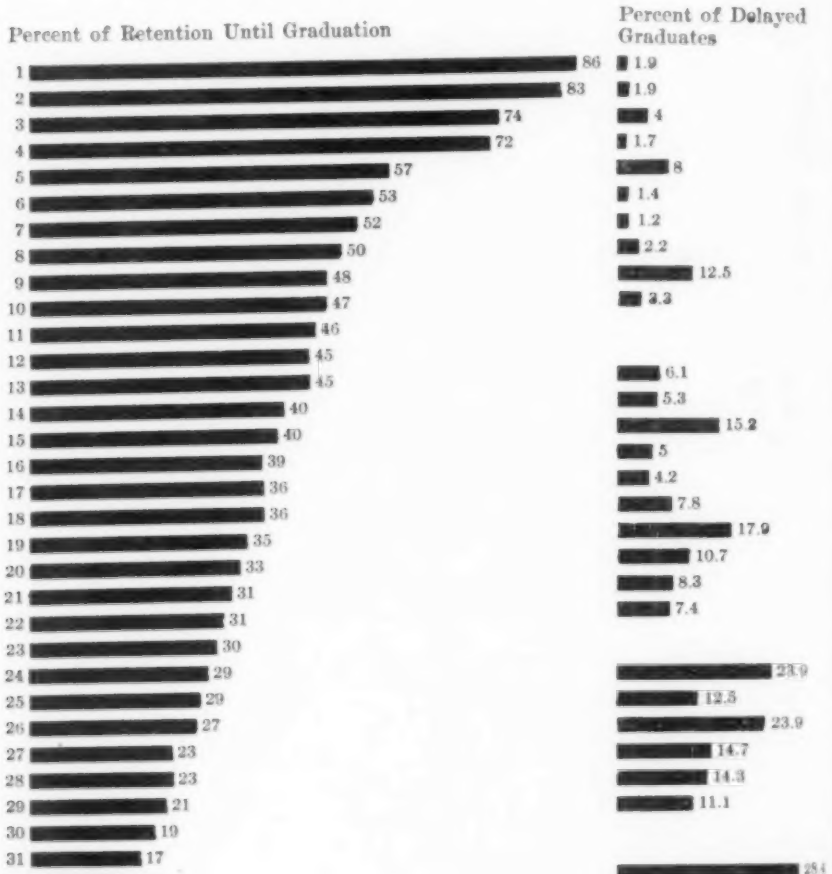

FIGURE I.—PERCENTAGES OF RETENTION AND DELAYED GRADUATION FOR THIRTY-FOUR JUNIOR COLLEGES

two consecutive school years for graduation. While an occasional student required four years in which to complete the work, the majority of this number required only one additional year for meeting the requirements. The range of variation in percentages of delayed graduates among the institutions may be noted in Figure I.

By comparing the holding power of the junior colleges with corresponding percentages of delayed graduates, a significant relationship is revealed. In Figure I is presented a bar-diagram indicating these two variables for each of thirty-four junior colleges. Retention percentages for the colleges are arranged in rank-order on the basis of total retention for the three combined entering classes. After the retention percent for each institution is also indicated its percent of delayed graduates. It will be noted that, in general, as the percent of retention decreases, the percent of delayed graduates increases. The generalization follows that the factors which make for higher retention of students in the different junior colleges also make for the completion of the work within the two successive school years.

TABLE I

STUDENT RETENTION IN JUNIOR COLLEGES CLASSIFIED ACCORDING TO TYPE, SEX OF STUDENTS AND LOCATION

No. Junior Colleges	Type of Junior College	No. Students Entering 1923-1926	No. Students Graduating	Percent Graduating
9	Public Junior Colleges	1972	675	34
24	Private Junior Colleges	3998	1714	42
	Total	5970	2389	40
3	Junior Colleges Enrolling Male Students Only	457	227	49.7
9	Junior Colleges Enrolling Female Students Only	1076	562	52.4
14	Private Coeducational Junior Colleges	4232	1243	29.4
	Total	5765	2032	35
10	Far West-Southwestern Junior Colleges	3705	951	25.6
16	Middle Western Junior Colleges	2774	1118	40
8	Southern Junior Colleges	1217	575	47
	Total	7696	2644	34

Not all students who fail to complete the two-year course within the junior colleges of first matriculation can be classed as eliminated. No inconsiderable number of such students transfer to other institutions for their second year of work. While considerable difficulty was experienced in securing data with respect to such transferring students, fairly reliable returns from thirteen (three public and ten private) junior colleges, showed a total of nineteen percent of students who transfer to

other institutions for the second year of work. Assuming that all the transferring students finish the second year of work, the percent of retention for all junior colleges combined is raised to fifty-five percent. This places the junior college considerably below the four-year college and university in its ability to hold students throughout the first two years.

The junior colleges were grouped according to type and location, for purposes of further analysis. These groups are as follows: public junior colleges; private junior colleges; junior colleges enrolling male students only; junior colleges enrolling female students only; coeducational junior colleges; junior colleges in the Far West and Southwest; junior colleges in the Middle West; and junior colleges in the South. The percent of student retention and delayed graduation, minus figures for transferring students, are given in Table I for each of the above groups. It should be added that retention figures for the junior colleges grouped separately, excepting those for "private" and "public" junior colleges, are slightly smaller than they should be due to the fact that corrections were not made for those of the 1925 entering classes who required more than two years for graduation.

It will be noted that total numbers of entering and graduating students are not identical for the groups of junior colleges in the three-fold classification. Two state junior colleges, not included in the first grouping, are included in the groups according to sex of students, and location. Since all the public junior colleges are coeducational, these institutions are not included in the classification based on sex of students. One junior

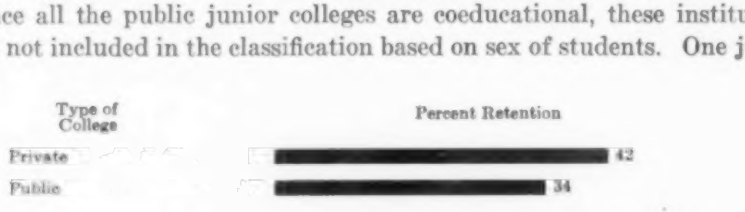

FIGURE II.—STUDENT RETENTION IN THE DIFFERENT TYPES OF JUNIOR COLLEGES

college in the East, which does not fall in any of the three geographical areas, is not included in the grouping based on location.

Differences in holding power of the junior colleges, variously classified, are conspicuous. These differences are presented more clearly in Figure II. By adding the nineteen percent of students who transfer to other institutions and who are assumed to have finished the second year of work to the percentages of students retained within institutions of first matriculation until graduation it is seen that out of each ten students entering the respective types of junior college, the following numbers complete the sophomore year: slightly more than six from the private, and slightly more than five from the public junior colleges; about seven from the institutions limiting their enrollment to either male or female students, and five from the private coeducational junior colleges; about four and a half from the Far Western, six from the Middle Western and slightly less than seven from the Southern junior colleges.

The superiority in holding power of private over public junior colleges would seem to be due to the larger retention in the private institutions enrolling female or male students exclusively. That junior colleges in the South are superior in retention to those in other geographical areas is largely to be explained by the fact that the proportion of public junior colleges as compared with the private institutions limiting enrollment to one sex is smaller in the Southern than in any of the other areas. Retention among the institutions in the Far West and Southwest is generally lower than in both the remaining geographical areas.

The generally negative relation between the holding power of junior colleges and percent of delayed graduates, illustrated in Figure I, has already been referred to. The percentages of graduates requiring longer than two years for graduation exactly reverses the retention rank order of the institutions, classified by groups. For example, the junior colleges enrolling male students, or female students only, standing highest in retention, show only one and five-tenths and three percent respectively of their graduates requiring longer than two years for graduation. The Far West and Southwestern colleges, standing lowest in retention, show more than eighteen percent of their graduates who require more than two years for graduation. The public junior colleges fall between the two extremes, showing fourteen and five-tenths of their graduates requiring longer than two years for completion of the course.

Any inquiry into the holding power of the junior college cannot properly neglect consideration of the extent to which junior college graduates continue their training at other institutions. Graduates from colleges entering into the retention study were studied in connection with further training. All graduates reported by the colleges for the three years, irrespective of time of matriculation, were included. Care was exercised to exclude graduates whose credentials were submitted to other colleges, but who were not followed up to see if actual enrollment had taken place.

The total number of graduates from all the junior colleges reporting for the three years is 3177. Of this number, 1287 or forty and five-tenths percent, are reported as having entered other institutions. Approximately forty-four percent of the 1925 graduates continued at other institutions as compared with forty-three percent of the 1926 and thirty-six percent of the 1927 graduates. The percent of continuing graduates for the years 1926 and 1927 is slightly smaller than that for 1925, owing to the inability of junior college officials to immediately check up on numbers of continuing graduates. It would seem clear that about forty-five percent of junior college graduates continue their training at other institutions.

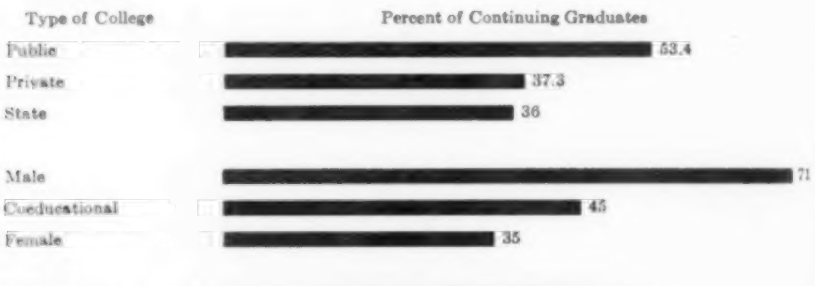

FIGURE III.—PERCENT OF GRADUATES OF DIFFERENT TYPES OF JUNIOR COLLEGES, CONTINUING AT OTHER INSTITUTIONS

A comparison of the different types of junior colleges from the standpoint of graduates who continue at other institutions reveals differences which are second only to those brought to light by retention itself. These differences are illustrated in Figure III. It should be noted, for example,

that whereas the private junior colleges stand higher than the public colleges in percent of graduating students, they stand lower in percent of graduates continuing at other institutions. The difference between the institutions limiting enrollment to the respective sexes is quite as conspicuous. Colleges enrolling male students only, due to the pre-professional objective, send twice as many graduates on the quest of further education as do institutions enrolling female students only although they have approximately the same holding power as institutions enrolling female students.

The types of higher, and other, institutions in which junior college graduates continue their training would seem significant. Junior college authorities were fairly specific in indicating the exact names of institutions entered by their graduates. For purposes of convenience the institutions have been grouped into the following classes:

Universities
Smaller four-year colleges
Schools of Theology
Teachers' Colleges
Schools of Technology
Schools of Agriculture
Nurses' Training Schools
Schools of Medicine
Schools of Business (College level)
Schools of Music
Schools of Mines
Miscellaneous

It will be observed, of course, that a certain amount of duplication exists in the list of institutions submitted above. Considerable numbers of students who enter universities doubtless pursue engineering, teachers', medical and other courses, and should be classed with students pursuing professional courses in small or more specialized institutions. Since we have no information indicating the specific courses in which junior college graduates are enrolled a more definite classification than is here offered cannot be made.

Of the total of 1287 continuing graduates from all junior colleges for the three years, 698, or fifty-four percent, enrolled in universities; 183, or fourteen percent, enrolled in smaller four-year colleges; 141, or eleven percent, enrolled in schools of theology; and 71, or five and seven-

tenths percent enrolled in teachers' colleges. The remainder of the graduates distributed themselves among a variety of institutions.

It is significant to note the extent to which the graduates of private and public junior colleges enter the respective types of higher institutions. Public junior college graduates lead in the procession to the university by a margin of twenty-nine percent over graduates of private junior colleges. Approximately seven out of each ten public junior college graduates entering other schools find their way into universities, whereas slightly more than four from private junior colleges enter universities. Graduates from private junior colleges enter smaller four-year colleges and teachers' colleges in greater relative numbers than do graduates from public and state junior colleges.

In conclusion the question may be raised as to how nearly the different types of junior colleges are meeting their objectives in our present era of college education. Several facts point to the conclusion that the public junior college, for example, in many ways approximates rather closely the first two years of university training. In the first place, student mortality is severe. In the second place, as compared with private institutions, relatively larger numbers of students require more than two years for completing two years of work, partly due to more exacting standards of instruction. In the third place, relatively large numbers of public junior college graduates enter the junior year at universities. The question might well be raised here as to whether the junior college is serving the new era of democracy in education as loyally as its sponsors could hope for.

There would seem little doubt that a part of the severe student elimination in the junior college, especially in the first few weeks of the first year, is to be explained by the fact that a considerable number of students unqualified to do work of college grade, who because of the proximity of their homes find it easy to matriculate and less embarrassing to drop by the wayside. There would seem to be little question that many junior colleges pay dividends, many times over, to that group of students who are "born to the purple" in being equipped with adequate ability for traditional college work. To what extent should junior colleges attempt to equip the lesser intellectual lights with appropriate tools of knowledge and skill? Must the junior college assume responsibility for all levels of student ability or should there appear a separate institution for the purpose of salvaging the "flotsam" and "jetsam" of college life?

RESEARCH IN SECONDARY SCHOOL METHODS*

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Scope of this Analysis.—THE field of method is concerned with the problems of objectives, materials of instruction, teaching procedures, and measurement of results. Since the preceding speaker on the program dealt with the contribution of research to the curriculum in secondary schools, which necessarily involves consideration of objectives and subject matter, I limited my analysis to research in teaching procedures and measurement of results. There are a number of other problems, which lie in the field of educational administration, that touch more or less intimately the work of the classroom teacher. Research dealing with such issues, however, as extra-curricular activities, marking systems, educational and vocational guidance, schedule making, records, size of class, teaching load, psychological tests as used for administrative purposes, and the various schemes for grouping grades into elementary and junior-senior high-school organizations is considered as belonging to the field of organization or administration of secondary schools, and has been covered by a previous speaker on this program.

In canvassing the literature to discover studies in the field of secondary method an effort was made to compile a reasonably comprehensive bibliography covering problems of teaching procedure in Grades VII to XII inclusive, the commonly accepted scope of the secondary period. It is recognized, however, that, according to Morrison, the secondary-school period may extend as far down as the fourth grade and up to the end of the junior-college period.[1] Emphasis was placed on factual and experimental investigations rather than on subjective analyses or discussions in the compilation of the bibliography, but a number of apt descriptions of helpful teaching procedures were listed. Also, as a matter of information and completeness, a number of recent textbooks dealing with various aspects of method were included.

Sources of Information Canvassed.—Monroe's *Ten Years of Educational Research, 1918-1927*, which includes 3,714 items, was examined

*Address delivered before the American Educational Research Association at Atlantic City, February 25, 1930.

[1] Morrison, H. C. *The Practice of Teaching in the Secondary School* (Chicago: University of Chicago Press, 1926), Chapter I.

to discover significant contributions to secondary method published in non-periodical form.[2] Annual lists[3] of non-periodical publications which appeared in 1927, 1928, and 1929, were canvassed to bring Professor Monroe's bibliography up to date. In order to make a rapid survey of the research in secondary method which has appeared in the periodical literature, the *Teachers Journal and Abstract* from 1926 to 1929 inclusive was examined. This is a monthly publication, established in 1926, which provides digests of significant articles appearing in other educational journals; it has sections devoted to both general and special methods.

Classification or Topical Index of Research in Secondary Method.—The investigations in the field of secondary method may be grouped under twenty-five headings, as found in the Topical Index which follows this paragraph. Succeeding portions of this paper will be devoted to systematic comment on selected experimental or factual studies of outstanding merit in the various fields represented and to a statement of important conclusions reached with respect to teaching procedures in secondary schools. Because of limitations of space it is not possible to list the 552 studies of method on which this paper is based. On request this bibliography in mimeographed form will be forwarded by the author to any interested person. The number which follows each of the twenty-five divisions in the Topical Index indicates the total number of references in the bibliography which deal with a given problem of method. The sum of the frequencies after each of the items in the Topical Index totals more than 552 references, since certain studies are classified under more than one heading. The twenty-five subdivisions of the Topical Index follow:

TOPICAL INDEX OF 552 STUDIES IN SECONDARY METHOD WITH FREQUENCIES

I. General method, educational theory, progressive education—30.
II. Psychology of learning, bases of learning, motivation, interest, etc.—20.
III. Study problems, directed and supervised study, how to study, use of time, reading problems—31.
IV. Individual, unit, contract, mastery-technique, case, homogeneous-grouping, exceptional-pupil methods—50.
V. Questioning, question and answer, discussion methods—7.

[2] Monroe, W. S., and others. *Ten Years of Educational Research*, 1918-1927, University of Illinois Bulletin, No. 51 (Urbana, Illinois: University of Illinois, 1928), p. 368.

[3] Wheeler, Joseph L. "Educational Book of 1927," *School and Society*, XXVI (December 31, 1927), 823-35.
Ibid., XXVIII (December 29, 1928), 801-15.
Ibid., XXX (December 28, 1929), 857-73.

VI. Project, problem, committee methods—13.
VII. Visual methods—9.
VIII. Lecture, lecture-demonstration methods—6.
IX. Laboratory methods—15.
X. Measurement of results, new-type testing, standard achievement tests—91.
XI. Prognosis, analysis of errors and difficulties, diagnostic and remedial work—22.
XII. Research digests, summaries, bibliographies, critiques—52.
XIII. Commercial and business education—12.
XIV. English—54.
XV. Fine arts—8.
XVI. Foreign languages—53.
XVII. Home economics—6.
XVIII. Manual, industrial, and agricultural arts—16.
XIX. Mathematics—44.
XX. Moral, religious, and character education—17.
XXI. Music—14.
XXII. Physical and health education—21.
XXIII. Science—72.
XXIV. Social studies and citizenship—68.
XXV. Miscellaneous—8.

Textbooks Dealing with Problems of General Method, Educational Theory, and Progressive Education.—To be classified under the first heading in the Topical Index are a number of textbooks of the past three or four years which discuss problems of general method or present descriptions of the so-called progressive or new education. Among the workers who have contributed to this field may be mentioned: Bode, Cobb, Demiashkevich, Douglass, Ferrière, Fontaine, Harris, Howerth, Kilpatrick, Leighton, H. L. Miller, Morrison, Mueller, Pringle, Harold Rugg, Thayer, Waples, Washburne, Lucy L. Wilson, and Wynne. A number of these writers have presented treatments of more or less conventional aspects of educational method. More specific mention should be made of certain contributors who have dealt with method from a somewhat unusual point of view.

Probably the most important addition to the field during the decade is Morrison's *The Practice of Teaching in the Secondary School*, which is a systematic account of teaching technique involving the mastery notion, unit organization of subject matter, a five-step teaching cycle in science subjects, and five types of teaching. This keen analysis is based on experimentation in the University of Chicago Laboratory Schools and has stimulated a considerable amount of similar investigation among public-school workers. Bode's *Conflicting Psychologies of Learning* and *Modern Educational Theories* and Thayer's *The Passing of the Recitation* are of more than ordinary interest as analytical critiques of current procedures in teaching and learning. Waples' *Problems in Classroom*

Method is an example of a decided tendency in educational textbook writing to base discussion on a job analysis of the difficulties and problems involved in the field under consideration. Ferrière's *The Activity School*, Rugg and Shumaker's *The Child-Centered School*, and Washburne and Stearns' *New Schools in the Old World* and *Better Schools* are stimulating accounts of the methods of the so-called new schools or progressive-education movement.

At this point it may be suggested that while the progressive-education movement has much to offer in the improvement of teaching method, there is urgent need for critical evaluation and experimental investigation of the procedures employed in the new schools and recommended for general use. Six essential characteristics of a program of progressive education have been listed as follows: (1) individuality, (2) freedom, (3) self-directed learning, (4) use of manual and mental activities for expression, (5) group-consciousness or social adaptation, and (6) parent education. Of course the problem which looms largest is to strike an appropriate balance between individuality and freedom on the one hand and social adaptation or conformity to the admittedly desirable institutions of society on the other hand. Proponents of the new movement recognize the shortcomings of progressive education. Rugg and Shumaker in *The Child-Centered School* have provided a good statement of such criticisms:[4] (1) The program of education lacks design; centers of interest are lop-sided, unrelated, and follow the individual child too far; some units are too long, while others are too short; in general there is lack of continuity of development. (2) The writings which describe the new schools are essentially description and self-congratulation and lack self-criticism. (3) There is a lack of clear thinking about the creative art. (4) There appears to be an inability on the part of the child-centered school to make systematic use of the techniques of science in experimental evaluation and measurement of the new methods. (5) There is lack of courage in demanding release from the strangle hold of the college. (6) The foregoing defects together with a lack of clear phrasing of the theories involved have antagonized the leaders of the study of scientific education.

It has been stated that the need for experimental measurement and scientific evaluation in the new schools is imperative. Apparently the

[4] Rugg, Harold, and Shumaker, Ann. *The Child-Centered School* (Yonkers-on-Hudson, New York: World Book Co., 1928), Chapter XXII.

progressive-education movement is in what may be considered its second stage of development. First, there was vigorous opposition to change, which has swung to uncritical acceptance of the so-called new methods in many quarters. Parenthetically speaking, mental testing has passed through similar steps and is now in its third stage, that of critical evaluation, as evidenced by the writings of such workers as Bagley, Dearborn, and Freeman. Scientific evaluation does not consist of opinions collected from parents, pupils, or teachers with respect to the merits of the Dalton plan or the socialized recitation; neither does it consist of journalistic description of the methods in use; it is not even analysis and criticism based on observation and painstaking rationalization. Of just what scientific evaluation does consist is a long story that has been reasonably well told in current volumes which deal with techniques of measurement, experimentation, statistics, and educational research.

It is not desirable to accept new methods simply because they are recent in origin. Fads come and go in the evolution of public education. Charters suggests that wide-spread national interest in educational ideas has a span of three or four years.[5] The project method was at the height of its popularity as a subject of discussion from 1917 to 1920; curriculum construction was the most popular subject from 1924 to 1927; and at present, character education seems to be holding the center of the educational stage. Individual instruction (of a poor quality to be sure) more than a century ago was followed by the popular monitorial system, which gave way to the improved Pestalozzian methods, and in turn many of the practices of Pestalozzi, Herbart, and Froebel have been discarded. Individual instruction is again in favor. In the classrooms of the monitorial schools of a century ago there were as many as 500 or even 1,000 children. Now Hudelson of Minnesota and others conclude after extensive experimentation that a greater or less advantage, at least, no disadvantage, accrues to students in large sections of college and high school.[6] In the experimental investigation and evaluation of the new education, Washburne a few years ago set an appropriate example in a careful survey of the Winnetka system.[7] Only in this way can the new schools receive the endorsement of the critical student of education.

[5] Charters, W. W. "Fads," *Educational Research Bulletin*, Ohio State University, VII (October 31, 1928), 326-27.

[6] Hudelson, Earl. *Class Size at the College Level* (Minneapolis: University of Minnesota Press, 1928), 300 pp.

Irwin, Manley, "A Summary of Special Investigations of the Effect of the Size of Class upon the Effectiveness of Instruction," *North Central Association Quarterly*, IV (December, 1929), 352-57.

[7] Washburne, C. W., and others. *A Survey of the Winnetka Public Schools* (Bloomington, Illinois: Public School Publishing Co., 1926), 136 pp.

The foregoing statements concerning progressive education are made with due recognition of the fact that different types of leaders and workers are needed in education. One editorial writer has divided such leaders into two types—innovators who establish "experimental" schools where traditional subjects are abolished and centers of interest are set up, and scientists who search for facts on which to base selection of curriculum materials and new procedures in promoting the learning process.[8] Another educational editor suggests that there are three kinds of leaders who make valuable contributions—the administrator, the investigator, and the interpreter.[9] Apparently the progressive-education movement has been reasonably well represented by innovators, interpreters, and administrators; the present need is for scientists and investigators who will apply their techniques in search of experimentally determined truth in this field.

Educational Psychology, Psychology of Learning, and Psychology of the School Subjects.—Since the appearance of Freeman's *The Psychology of the Common Branches* in 1916 and Judd's *Psychology of High-School Subjects* in 1915, a number of other writers have attempted to apply the principles of educational psychology and mental organization to learning and teaching in the school subjects or special fields. A canvass of the titles of these books indicates the application of psychology to elementary-school subjects, secondary-school subjects, mathematics, athletics and play, music, typewriting and skill, handwriting, reading and spelling, character education and personality, social institutions and language, and adolescence. The books by Freeman and Judd may be thought of as pioneer attempts to effect a union between psychology and methods of teaching, although they may be generally regarded as containing more underlying psychology than specific methods and devices.

Even a casual inspection of recent treatments of various aspects of educational psychology under the names of such authors as Averill, Brooks, Cameron, Ellis, Gates, Hollingworth, Jordan, Judd, La Rue, Monroe, Palmer, Pyle, and Sandiford indicates the extent to which experimental investigations, the social products of human intelligence, techniques of measurement, educational hygiene, and the learning proc-

[8] "Invention and Appraisal," *Educational Method*, IX (December, 1929), 129-30.

[9] Morgan, J. E. "Educational Interpretation and the Printed Word," *School and Society*, XXX (July 30, 1929), 79-83.

esses in the school subjects have been utilized rather than the subjective rationalizations of introspective, structural, sensory, and instinct psychology. The fact that Pyle in the revised edition of his *The Psychology of Learning* has attempted to summarize the known facts of the psychology of learning into 114 specific statements with illustrations is significant, even though certain of these formulated principles are expressed rather dogmatically and in some instances may be considered debatable.[10]

The work of the Chicago group, with the aid of the eye-movement technique, in studying the psychological processes involved in reading, foreign languages, and arithmetic is of unusual interest. Morrison has formulated a remarkably clear statement of the types of learning in the secondary school:[11] (1) science type including grammar, principles of ethics and logic, science (physical, biological, and social), home management and home economics, theory of music plus other fine arts, and transportation and commercial law; (2) appreciation type including fine arts, religion, moral behavior, and literature; (3) practical-arts type including shop courses in the mechanical arts, cooking, sewing, dressmaking, drawing, painting, and the plastic arts; (4) language-arts type including learning to read and write the vernacular, English composition, foreign languages, stenography, and musical expression; and (5) the pure-practice type including the training of the vocal organs in foreign language and music, finger exercises in musical instrumentation, spelling, the tables in arithmetic, and memorization of formulas.

Directed Study, the How-to-Study Movement, and Reading Procedures.—Current treatments of study problems in textbook or monograph form may be found under the names of Book, Brownell, Butterweck, Crawford, Flemming and Woodring, Good, Lyman, Muse, Sandwick, Shreve, Von Kleinsmid, and Whipple. The supervised or directed study movement has failed to live up to the extravagant claims made by its enthusiastic supporters. It has been a much discussed topic within the past decade, and in many instances inadequate evidence has been advanced in support of the recommended study practices. For these reasons certain professional journals have become rather reluctant to accept for publication manuscripts dealing with supervised study.

[10] Pyle, W. H. *The Psychology of Learning*, Revised and Enlarged (Baltimore: Warwick and York, 1928) x + 442 pp.

[11] Morrison, H. C. *The Practice of Teaching in the Secondary School* (Chicago: University of Chicago Press, 1926), viii + 662 pp.

After summarizing the literature on supervised study Shreve states his conclusions as follows:[12]

"On the basis of objective, measurable results no large claims can be made for supervised study. The statistical data have been found to be very unreliable and the experimental data meager and conflicting. Moreover, no measures of reliability were used by the experimenters to establish the validity of their results."

Shreve's own experiments with supervised study, however, point rather conclusively to the superiority of the directed-study or experimental groups as compared with the control groups which used the traditional classroom procedure.

Brownell concludes his summary of investigations dealing with supervised study by four significant statements:[13] (1) An unfortunately large amount of writing on supervised study is repetitious and, to put it mildly, futile. (2) Some writers fail to confine their discussions to supervised study by involving related issues such as classification of pupils in homogeneous groups, teaching by projects, individual instruction, and educational and vocational guidance. (3) Many investigations appear to represent wasted effort, since it is unnecessary to prove the obvious, namely, that any intelligent effort to apply generally accepted principles of teaching will be more efficient than instruction which neglects or violates such principles. (4) Relatively too much attention in educational writing and thinking has been paid to the technique of supervised study and too little to pupil direction in study, which is the very heart and center of supervised study. Attention also should be directed to Woodring and Flemming's summary of investigations on study.[14]

Crawford states that the supervised-study movement has not been entirely successful and involves much expense in the form of salaries when the teacher of each subject is teaching her own pupils how to study.[15] He recommends, as a supplement to the plan of supervised study and to a certain extent as a substitute for it, a definite course in how to study. His statement of considerations favoring such a course and of the diffi-

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[12] Shreve, Francis. *Supervised Study Plan of Teaching* (Richmond, Virginia: Johnson Publishing Co., 1927), p. 37.

[13] Brownell, W. A. *A Study of Supervised Study*, Bureau of Educational Research Bulletin, No. 26 (Urbana, Illinois: University of Illinois, 1925), p. 48.

[14] Woodring, M. N., and Flemming, C. W. "Survey of Investigations on Study," *Teachers College Record*, XXIX (March and April, 1928), pp. 527-49, 605-17.

[15] Crawford, C. C. "The How-to-Study Course in the High School," *School Review*, XXXVIII (January, 1930), 16-27.

culties involved serves as an excellent summary of the various aspects of the how-to-study movement. The considerations favoring the how-to-study course are as follows:

1. The how-to-study course is relatively new and different and for that very reason deserves open-minded consideration.
2. The course will compare favorably with the accepted and traditional courses in value and in its contributions to the general education of the individual.
3. Direct methods of teaching are preferable to indirect methods.
4. The different subjects have many study techniques in common which can be taught economically in a single course.
5. The course places definite responsibility on someone for teaching how to study.
6. Subject teachers as a group know very little about how to study.
7. The course is a means of improving the quality of teaching done by the various subject teachers.
8. Offering the course will cause us to learn more about how to study and how to teach study habits.
9. The offering of how-to-study courses has been tried successfully in both high school and college.

Objections and difficulties related to the how-to-study course are stated as follows:

1. Method is of small importance, and subject matter is supreme.
2. The same methods of study are not good for all pupils.
3. The available content for the course is meager and inadequate.
4. Teaching procedures are not yet well worked out for the course.
5. Measurable improvement in study ability is difficult to show as a result of the course.
6. One teacher cannot teach pupils how to study many different subjects.
7. Subject teachers sometimes object to having outsiders give advice to their pupils.
8. Training given in the course may not carry over into actual practice in other courses.
9. The course may release subject teachers from all responsibility for teaching their pupils how to study.
10. The course will increase school costs through the addition of another teacher.
11. The course will crowd other courses out of the curriculum to some extent.
12. College-entrance requirements do not recognize the course.

With respect to type of reading procedure employed the available evidence points decidedly to the merits of rapid extensive reading of a reasonably wide range of material rather than analytical study or repeated rereading of a relatively small amount of material such as a textbook assignment. The data accumulated by Curtis in general science,[16] by Good in social science,[17] and by Coryell,[18] Crow,[19] and Williams[20] in literature are in agreement on this point. Gray's *Summary of Investi-*

[16] Curtis, F. D. *Some Values Derived from Extensive Reading of General Science*, Teachers College Contributions to Education, No. 163 (New York: Teachers College, Columbia University, 1924), vi + 142 pp.

[17] Good, Carter V. *The Supplementary Reading Assignment* (Baltimore: Warwick and York, 1927), xiv + 228 pp.

[18] Coryell, Nancy G. *An Evaluation of Extensive and Intensive Teaching of Lit-*

gations Relating to Reading together with the annual supplements which appear in the *Elementary School Journal* is an outstanding digest of studies in this field that is of significance at the secondary level as well as the elementary level.[21]

Provision for Individual Differences.—Methods of adjusting materials and techniques to the individual needs, capacities, and interests of pupils have been treated so extensively in the educational literature of the past five or six years that only brief comment is made in this paper concerning such problems. The number of references under this heading in the Topical Index is indicative of the interest in school adjustments to individual differences. The evidence summarized in the Twenty-fourth Yearbook of the National Society for the Study of Education indicates that ability grouping does not adequately provide for individual differences, that individual instruction saves the time of many children and tends to raise the level of efficiency in the tool subjects.[22] Purdom reported in 1929 that when no special effort was made to adapt materials or methods of instruction to the varying abilities of the homogeneous sections in his experimental group, no particular advantage accrued to the pupils in the homogeneous sections as compared with pupils in the heterogeneous control groups.[23] Such conclusions, of course, should not be interpreted to mean that ability grouping is valueless, since a highly essential procedure in putting into effect a scheme of ability grouping is to provide acceleration, enrichment, or both as a means of meeting individual needs, interests, and capacities.

The Commonwealth Fund Survey of the Winnetka public schools showed that in general the individual technique tends to bring about the elimination of grade repetition and a decrease of over-ageness, adaptation to individual differences, better mastery of knowledge and skill sub-

erature, Teachers College Contributions to Education, No. 275 (New York: Teachers College, Columbia University, 1927), viii + 202 pp.

[19] Crow, C. S. *Evaluation of English Literature in the High School*, Teachers College Contributions to Education, No. 141 (New York: Teachers College, Columbia University, 1924), 178 pp.

[20] Williams, R. R. "Extensive Reading versus Intensive Study of Literature," *School Review*, XXXVII (November, 1929), 666-78.

[21] Gray, W. S. *Summary of Investigations Relating to Reading*, Supplementary Educational Monographs, No. 28 (Chicago: School of Education, University of Chicago, 1925), viii + 276 pp.

[22] Washburne, C. W., and others. *Adapting the Schools to Individual Differences*, Twenty-fourth Yearbook of the National Society for the Study of Education, Part II (Bloomington, Illinois: Public School Publishing Co., 1925), 410 pp.

[23] Purdom, T. L. *The Value of Homogeneous Grouping*, University Research Monographs, No. I (Baltimore: Warwick and York, 1929), 100 pp.

jects, and adequate provision for self-expression and socialization.[24] Later evidence shows that Winnetka pupils on entering the senior high school after finishing the junior high school, which ends with the eighth grade, excel in scholarship and extra-curricular activities.[25]

A number of other studies under the heading of individual methods indicate the superiority, or at least equal merit, of the contract plan as compared with the day-by-day recitation method, and of the unit method as compared with the traditional daily assignment. Of course, as one critic points out, the difficulties in the various individual schemes mentioned are in securing the searching and enriching experience that comes from social contacts; the submergence of the teacher in the technique (even the best teachers have only twenty-four hours in a day), and the danger of considering individual instruction as a mere vehicle of content for the acquisition of information to the neglect of the pupil as a social being.[26]

Socialization through Pupil-Question, Discussion, Project or Problem, and Committee Methods.—It was stated in the preceding paragraph that one of the difficulties in carrying out effectively an individualized scheme of instruction is to provide the socialization that should result from pupil contacts in group activity. It will be recognized that various forms of large or small group activity, including discussion, project, and committee procedures should promote the development of social coöperation as well as stimulate pupil initiative. Some evidence concerning the merits of these methods is available.

If we are permitted to borrow some evidence from the college level, it may be stated that the learner profits more from a social or discussion method than from a traditional lecture or question-and-answer method. The 1929 Yearbook of the National Society of College Teachers of Education summarizes experiments that indicate material advantages in some investigations and, at least, equal merit in other instances of a socialized procedure over the traditional lecture and recitation methods, of the problem method over the lecture and reading method, and of class discussion over the lecture method.[27] These conclusions seem to apply

[24] Washburne, C. W., and others. *A Survey of the Winnetka Public Schools* (Bloomington, Illinois: Public School Publishing Co., 1926), 136 pp.

[25] Washburne, C. W., and Raths, Louis E., "The High-School Achievement of Children Trained under the Individual Technique," *Elementary School Journal*, XXVIII (November, 1927), 214-24.

[26] Stephens, S. D. "Individual Instruction—Some Blind Alleys," *English Journal*, XVIII (February, 1929), 145-51.

[27] Gray, W. S. and others. *Current Educational Readjustments in Higher Education.* Yearbook of the National Society of College Teachers of Education (Chicago: University of Chicago Press, 1929), Chapter VI.

with greater force in dealing with younger pupils at the secondary level.

A few selected attempts to determine objectively the merits of socialized procedures at the secondary level should be enumerated. Odell reports an attempt to rate objectively, through the use of scales, pupils' answers to thought questions,[28] and finds some advantages resulting, although statistically the increased reliability which attends the use of scales is not significant as compared with traditional methods. Washburne found that the use of questions had a very favorable effect upon the recall and understanding of social-science material.[29] Storm discovered that pupils are able to ask questions as thought-provoking and stimulating as their teachers do, which would certainly imply that pupils rather than teachers should ask the questions, since the individual who does real thinking is, generally, asking himself or some other person questions.[30] Greenawalt reports that an experimental group which used the committee method in English was superior to a control group which employed the traditional method.[31] Blaine found that eighty-four of 116 teachers, distributed from the second to the eighth grade and who were employing the project method, expect to make wider use of this method.[32] The results of these studies indicate that the subjects in which the project method is used most, arranged in descending order of frequency, are geography, industrial arts, English, and civics. This method was least employed in physiology, music, spelling, writing, and reading.

Laboratory versus Lecture-Demonstration Methods.—Experimentation in methods of science teaching seems to have centered around the comparative merits of teacher-demonstration methods versus pupil-laboratory methods. The results secured in many of these investigations are not statistically significant, although they rather favor the teacher-demonstration method. With respect to the validity of these experiments

[28] Odell, C. W. *The Use of Scales for Rating Pupils' Answers to Thought Questions*. University of Illinois Bulletin, XXVI, No. 36 (Urbana, Illinois: University of Illinois, 1929), 34.

[29] Washburne, J. N. "The Use of Questions in Social Science Material," *Journal of Educational Psychology*, XX (May, 1929), 321-59.

[30] Storm, H. C. "Who Can Ask Better Questions—Teachers or Pupils?" *Elementary School Journal*, XVIII (April, 1928), 610-15.

[31] Greenawalt, Lambert. "The Committee Method in Senior English," *English Journal*, XVIII (November, 1929), 727-32.

[32] Blaine, W. D. "Present Status and Future Possibilities of the Project Method in Public School Teaching," *Educational Method*, IX (November and December, 1929), 94-104, 166-76.

in science Riedel has made a severe criticism, which may be summarized in the sentences that follow.[33] The studies made so far were found to be of the good-opinion type rather than of real scientific character. There were two studies in which the number of students used exceeded twenty. Objective tests of at least ten questions were used in four studies. There were three studies in which tests were used to measure other than information. There were three studies in which the researcher repeated, using identical contents and methods. No studies were made in which the identical method was tested by other teachers; no studies were made in which the research was published fully enough so that other persons might be guided in attempting the same studies.

Downing's conclusions, however, concerning virtually the same experiments reviewed by Riedel are less severe, and follow:[34]

The lecture-demonstration method of instruction yields better results than the laboratory method in imparting essential knowledge and is more economical of time and expense. This is true for both bright and dull pupils and for all types of experiments. The last two points need additional experimental confirmation.

The lecture-demonstration method appears to be the better method for imparting skill in laboratory technique in its initial stages and for developing ability to solve new problems. Again, these two items are tentative conclusions, and further experiments will be required to establish them.

Oral instructions are, in general, more effective than written instructions in lecture demonstration but less effective in laboratory work. "What the experiment proves" is the item on which most pupils fail and is evidently the point to be stressed in teaching.

In science teaching we need to concentrate on a few fundamental principles and to curtail the multiplicity of details in order that pupils may retain the instruction. "Teach for keeps" must be the slogan.

Since the teacher-demonstration method has certain advantages, or at least equal merit, as compared with the laboratory method, it has been recommended as a means of saving time and expense in the care and purchase of laboratory apparatus and material. Duel presents some evidence, however, to show that these same economies may attend the use of the laboratory method if pupils follow a rotation rather than an even-

[33] Riedel, F. A. "What If Anything Has Really Been Proved as to the Relative Effectiveness of Demonstration and Laboratory Methods in Science?" *School Science and Mathematics*, XXVII (May and June, 1927), 512-19, 620-31.

[34] Downing, E. R. "A Comparison of the Lecture-Demonstration and the Laboratory Methods of Instruction in Science," *School Review*, XXXIII (November, 1925), 688-97.

front system in laboratory work.[35] Under the even-front system all members of the class perform the same exercise at the same time, while under the rotation system a limited number of pupils are assigned to each set of apparatus and each pupil is permitted to begin another experiment as soon as ready.

Visual Methods of Instruction.—The public has been accustomed to discount to a considerable extent the extravagant claims and propaganda concerning the merits of visual instruction disseminated in some instances by manufacturers of cameras, films, projectors, and other visual aids. Yet, common sense recognizes such devices as valuable avenues of presentation in teaching children. Now common sense is supported by the recent data, collected by Wood and Freeman in coöperation with the Eastman Kodak Co., which is reasonably conclusive evidence of the value of motion pictures in classroom instruction.[36] In the investigation there were represented twelve cities, nearly eleven thousand children from the fourth to the ninth grades inclusive, and about two hundred teachers. The experimental groups had the benefit of motion pictures, while the control groups had only such visual aids as still pictures, models, etc. In two other studies on a smaller scale Tilton and Knowlton show the value of photoplays in teaching seventh-grade history,[37] and Ross demonstrates the aid of still pictures in teaching history in high school.[38]

Objective Measurement of Results and Diagnostic and Remedial Work.—Within the limited space available it is possible to call attention only to the large amount of activity in the field of objective measurement of achievement, as evidenced by the number of references under this heading in the Topical Index. Smith and Wright state that there are now more than eight hundred standard tests available.[39] The theory and practice of achievement testing by use of standard tests have ex-

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[35] Duel, H. W. "The Even-Front System versus the Rotation System in Laboratory Physics," *School Review*, XXXVI (June, 1928), 447-54.

[36] Wood, B. D., and Freeman, F. N. *Motion Pictures in the Classroom* (Boston: Houghton Mifflin Co., 1929), 392 pp.

[37] Tilton, J. W., and Knowlton, D. C. "The Contribution of Ten Chronicles-of-America Photoplays to Seventh-Grade History Teaching," *Journal of Social Psychology*, I (February, 1930), 78-96.

[38] Ross, C. L. "The Value of Pictures in Teaching History," *Journal of Educational Research*, XVII (February, 1928), 113-16.

[39] Smith, H. L., and Wright, W. W. *Tests and Measurements* (New York: Silver, Burdett and Co., 1928), p. v.

tended to each of the high-school subjects and have been adequately treated by such workers as Greene, Henmon, Kelly, Levine and Marks, Monroe, Odell, Russell, Smith and Wright, Symonds, Van Wagenen, Wilson and Hoke, Wood, and Woody.

The field of new-type or non-standard testing is represented by textbooks by Odell, Orleans and Sealy, Paterson, Ruch, and Russell. A desirable current trend in the measurement of achievement is to regard tests not only as indices of results accomplished, but also as teaching instruments. Cocks reports material advantages for the true-false test as a teaching instrument.[40] Curtis and Woods found value in terms of pupil-learning and economy of the teacher's time in having pupils score their own new-type examination papers.[41]

The fact that attention is being given to achievement tests as teaching instruments is also evidenced by the development of diagnostic instruments in a number of the school subjects and by attempts in virtually every teaching subject to discover the learning difficulties encountered by pupils. Large gains in performance have been reported as a result of subsequent remedial exercises. This type of diagnostic and corrective teaching has made necessary the preparation of working materials in the form of pads of exercises and workbooks. Of course, a natural question to arise in connection with the large gains reported as the result of remedial work is, "How permanent is this learning?" If as reported in one study,[42] however, freshmen in a teacher-training institution can improve, during two months more than five years in progress, as measured by the Monroe Survey Test in Arithmetic, it seems desirable to provide in the high schools and the grades whatever time and repetition may be necessary to make learning relatively permanent. This would relieve the higher institution, particularly the teacher-training division, of corrective work for which it can ill afford the time.

Research in Special Method and Related Fields.—It is possible to refer only to certain digests of research in special fields of instruction and to enumerate a few major investigations of national prominence. The worker who is interested in a comparison of the number of the re-

[40] Cocks, A. W. *The Pedagogical Value of the True-False Examination* (Baltimore: Warwick and York, 1929), 132 pp.

[41] Curtis, F. D., and Woods, G. G. "A Study of the Relative Teaching Values of Four Common Practices in Correcting Examination Papers," *School Review*, XXXVII (October, 1929), 615-23.

[42] Christofferson, H. C. "Arithmetic and College Freshmen," *Journal of Educational Research*, XXI (January, 1930), 78-80.

search contributions to each of the twelve secondary subject-matter fields may refer to the Topical Index under the appropriate headings. There are, in the fifth and sixth yearbooks of the Department of Superintendence, digests of research in the high-school subjects of English, science, mathematics, social studies, foreign languages, music, art, home economics, industrial arts, and commercial education.[43] Valuable monographs that summarize investigations in subject-matter fields or make available extensive bibliographies in given fields have been prepared by competent educational workers: Blackstone in commercial education;[44] Gray in reading;[45] Lyman in grammar, language, and composition;[46] Buchanan and MacPhee in modern languages;[47] Buswell and Judd in arithmetic;[48] Watson in religious education;[49] Ryan in school athletics;[50] Curtis in science;[51] Rugg in social sciences and citizenship;[52] and Ogg in the humanistic and social sciences.[53] It is encouraging, in the first place, to find so many helpful investigations that make summaries necessary

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[43] *The Junior High-School Curriculum*, Fifth Yearbook of the Department of Superintendence (Washington: Department of Superintendence, 1927), Part III.
The Development of the High School Curriculum. Sixth Yearbook of the Department of Superintendence (Washington: Department of Superintendence, 1928), Part II.

[44] Blackstone, E. G. *Research Studies in Commercial Education*, 1, University of Iowa Monographs in Education, No. 7 (Iowa City, Iowa: University of Iowa, 1926), 160 pp.
Blackstone, E. G. *Research Studies in Commercial Education, II*, University of Iowa Monographs in Education, No. 8 (Iowa City, Iowa: University of Iowa, 1928), 128 pp.

[45] Gray, W. S. *Summary of Investigations Relating to Reading*, Supplementary Educational Monographs, No. 28 (Chicago: Department of Education, University of Chicago, 1925), viii + 276 pp.

[46] Lyman, R. L. *Summary of Investigations Relating to Grammar, Language, and Composition*, Supplementary Educational Monographs, No. 36 (Chicago: Department of Education, University of Chicago, 1929), viii + 302 pp.

[47] Buchanan, M. A., and MacPhee, E. D. *An Annotated Bibliography of Modern Language Methodology*, Vol. VIII of the Modern Foreign Language Study (Toronto, Canada: University of Toronto Press, 1928), 428 pp.

[48] Buswell, G. T., and Judd, C. H. *Summary of Educational Investigations Relating to Arithmetic*, Supplementary Educational Monographs, No. 27 (Chicago: Department of Education, University of Chicago, 1925), viii + 212 pp.

[49] Watson, G. B. *Experimentation and Measurement in Religious Education* (New York: Association Press, 1927), xii + 296 pp.
Watson, G. B., and Biddle, Delia H. *A Year of Research, 1927*, Chicago: Religious Education Association, 1929.

[50] Ryan, W. C. *The Literature of American School and College Athletics*, Carnegie Foundation for the Advancement of Teaching Bulletin, No. 24 (New York: Carnegie Foundation for the Advancement of Teaching, 1929), xlvi + 306 pp.

[51] Curtis, F. D. *A Digest of Investigations in the Teaching of Science in the*

and, in the second place, to have available qualified workers who are willing to perform this laborious task. It is hoped that in the near future similar digests of scientific investigations in other secondary fields of instruction, as well as in the major divisions of general education, will be undertaken.

There are major investigations recently completed in secondary fields of instruction which are of unusual interest and significance. The results of the Modern Foreign Language Study have appeared in seventeen volumes.[54] Apart from statistical and questionnaire studies the investigation has been concerned with word, syntax, and idiom counts, and the construction of standard tests. The results of such a comprehensive survey of modern-language instruction in Canada and the United States should be of great importance in the improvement of instruction in this field. The work of Hartshorne and May in the Character Education Inquiry has resulted in three volumes, two already off the press,[55] dealing with problems of deceit, restraint, and persistence. The Carnegie investigation of college athletics, which has raised such a storm in educational and lay circles generally, touches very directly the conduct of the program of physical education in secondary schools.[56] It has been pointed out that in spite of questionable techniques and special pleading involved in the Classical Investigation a decided effect on the teaching of Latin has been accomplished.[57] These advances are in the form of greatly improved textbooks for the first and second years, standard tests,

Elementary and Secondary Schools (Philadelphia: P. Blakiston's Son and Co., 1926), x + 342 pp.

[53] Rugg, E. U. *Curriculum Studies in the Social Sciences and Citizenship*, Colorado Teachers College Education Series, No. 3 (Greeley, Colorado: Colorado State Teachers College, 1928), xiv + 214 pp.

[54] Ogg, F. A. *Research in the Humanistic and Social Sciences* (New York: Century Co., 1928), 454 pp.

[54] Henmon, V. A. C. "Some Significant Results of the Modern Foreign Language Study," *Journal of Educational Research*, XIX (February, 1929), 79-91.

[55] Hartshorne, Hugh, and May, Mark A. *Studies in Deceit*. Studies in the Nature of Character, I (New York: Macmillan Co., 1928), xxii + 414 + viii + 306 pp.

Hartshorne, Hugh, and May, Mark A. *Studies in Service and Self-Control*. Studies in the Nature of Character, II (New York: Macmillan Co., 1929), 560 pp.

Russell, W. F. "The Character Education Inquiry," *Educational Record*, X (July, 1929), 202-8.

[56] Savage, H. J. and others. *American College Athletics*. Carnegie Foundation for the Advancement of Teaching Bulletin, No. 23 (New York: Carnegie Foundation for the Advancement of Teaching, 1929), xxii + 384 pp.

[57] Lucasse, Florence J. "What the Classical Investigation Has Accomplished," *Journal of Educational Research*, XX (June, 1929), 15-21.

teaching procedures, word counts, changes in state and city courses of study, and changes in college-entrance requirements.

Extensive Investigations in Secondary Method and Related Fields Under Way.—A number of surveys or studies of secondary instruction which are under way on a large scale or have just been completed should be of interest to workers in secondary schools: the national survey of secondary instruction, subsidized by Congress and under the direction of the United States Office of Education;[58] a comparative study of the secondary schools of England and the United States under the direction of E. D. Grizzell of the University of Pennsylvania;[59] and an investigation of history and other social studies in the schools, sponsored by the American Historical Association.[60] Current news items in educational periodicals briefly described other surveys and studies that are of concern to secondary teachers, supervisors, and administrative officers: a survey of the teaching of science in the high schools of the North Central Association by F. D. Curtis of the University of Michigan; a study to determine the causes of existing maladjustment between secondary and higher institutions of learning, extending over a four- to a six-year period, by the Carnegie Foundation for the Advancement of Teaching working with the Joint Commission of the Association of Pennsylvania College Presidents and State Department of Public Instruction; and an investigation of the use of radio in public schools, promoted by the Department of the Interior and under the direction of Commissioner Cooper of the Office of Education.

Needed Research in Secondary Method and Closely Allied Fields.—The scarcity of experimental investigations of teaching methods in such school subjects as commercial education, home economics, industrial arts, and physical education is a matter for comment. Possibly the fact that many teachers of these special subjects have not had training in professional courses which deal with techniques of educational research is a partial explanation of the small number of factual studies in such fields.

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[58] "The Survey of Secondary Education," *School and Society*, XXXI (January 4, 1930), 11.
"The National Survey of Secondary Education," *School Review*, XXXVII (December, 1929), 721-22; XXXVIII (January, 1930), 1-2.

[59] "Comparative Study of the Secondary Schools in England and in the United States," *School and Society*, XXX (August 24, 1929), 261-62.

[60] "Commission on the Investigation of History in the Schools," *School and Society*, XXX (December 7, 1929), 765-66.
"The Social Sciences," *Educational Research Bulletin* (Ohio State University), VIII (September 25, 1929), 300-301.

Competent educational investigators have emphasized various other aspects of teaching in high schools which require further study. Briggs canvassed research workers in secondary education to ascertain the problems which in their opinion needed investigation; replies were received from forty-five men who had published in the field. The problems considered of greatest importance at the secondary level, arranged according to frequency of mention, were: methods, 21; organization, 19; teachers, 19; psychology, 17; tests, 16; finance, 9; prognosis, 7; the principal, 6; and supervision, 6. Briggs considers it strange that the history of secondary education has been so neglected as a research field during late years.[61] Briggs also lists in his *Curriculum Problems* twenty-seven questions which he maintains must be answered before the problems in the field of the curriculum can be solved satisfactorily.[62]

Symonds presents a list of eighty problems in the field of measurement in secondary education grouped under seven headings:[63] characteristics of tests; new tests; characteristics of mental growth of children of high-school age; use of tests in teaching; problems relating to marks, pupil placement, and program; problems relating to the measurement of efficiency; and problems relating to prediction.

Barr discusses seven types of needs in the field of classroom supervision: (1) exact information about the thing to be improved; (2) more information about the probable effectiveness of different training programs; (3) more information about the validity, objectivity, and reliability of the items of teaching observed by supervisors; (4) experimentally determine principles of teaching; (5) more information about the improvability of teachers; (6) more information about the relative effectiveness of various improvement (supervisory) devices; and (7) more exact measures of teaching ability.[64] Barr also indicates twenty-one aspects of administration and supervision which may well be studied by educational workers who are planning a year's growth.[65]

Henmon calls attention to the large number of unsolved problems

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[61] Briggs, T. H. "Problems in Secondary Education That Need Solution," *School Life*, XI (February, 1926), 116-18.

[62] Briggs, T. H. *Curriculum Problems* (New York: Macmillan Co., 1926), xvi + 138 pp.

[63] Symonds, P. M. "Needed Research in the Field of Measurement in Secondary Education," *Journal of Educational Research*, XVI (September, 1927), 119-26.

[64] Barr, A. S. "Needed Research in Classroom Supervision," *Peabody Journal of Education*, V (January, 1928), 209-15.

[65] Barr, A. S. "Planning a Year's Growth," *Journal of Educational Research*, XX (September, 1929), 133-35.

in pre-school learning, the general psychology of learning, and the special psychology of learning school subjects under school conditions.[66] His not entirely optimistic statement concerning measurement and experimentation in educational methods is as follows: "All we can do is to dream of the day when principles of method that will stand the test can be formulated and in the meantime live as well as we can in our dreams. We are afflicted now with inadequate measurements, inconclusive experiments, and a realization of the complexity of our problems."[67]

Certain chapters of the 1928 yearbook of the Department of Superintendence include suggestions relating to problems which should be investigated in the secondary school subjects.[68] Leonard suggests that workers in the field of English are now in a better position to launch a comprehensive investigation than were the modern-language people at the time the Modern Language Study was started. He feels that a thorough investigation of the teaching of English is desirable. Leonard makes these suggestions after seven weeks spent in visits to research centers where he compiled a list of more than three hundred studies relative to the teaching of English.[69]

Educators and investigators have not been slow to criticize the studies made in the field of method. Curtis names twelve shortcomings of investigators in the teaching of science.[70] He appreciates the courage and enterprise of the earlier investigators and the contributions made, but feels that many of the studies are faulty in one or more of the following ways: (1) failing to state the problem definitely; (2) assuming the equivalence of experimental groups without insuring it; (3) equating the groups upon a basis other than that by which the results are measured; (4) failing to isolate the experimental factor; (5) delimiting the teaching method investigated so rigorously that it would not be applicable in a classroom; (6) failure to define terms, as "lecture method," "textbook method," etc.; (7) confusing method, findings, and conclusion in report, and failing to give technique in sufficient detail; (8)

[66] Henmon, V. A. C. "Needed Research in the Field of Learning," *Journal of Educational Research*, XI (May, 1925), 313-21.

[67] Henmon, V. A. C. "Measurement and Experimentation in Educational Methods," *Journal of Educational Research*, XVIII (October, 1928), 185-94.

[68] *The Development of the High-School Curriculum.* Sixth Yearbook of the Department of Superintendence (Washington: Department of Superintendence, 1928), Part II.

[69] Leonard, S. A. "Research in the Teaching of English," *Journal of Educational Research*, XIX (March, 1929), 317-21.

[70] Curtis, F. D. "Some Reactions Regarding the Published Investigations in the Teaching of Science," *School Science and Mathematics*, XXVII (June, 1927), 634-41.

evaluating a complex situation on the basis of one criterion only; (9) employing crude, subjective tests in measuring results; (10) gross errors in recording data; (11) introducing personal opinions and bias into the investigation and findings; and (12) making sweeping generalizations from insufficient data.

In discussing the contribution of studies of learning and of the nature, capacities, and development of the child, Freeman states that too many investigations have been trivial, have been negative in their conclusions, and have been for the purpose of appraisal rather than discovery.[71]

Thorndike discusses the need for fundamental analysis of methods of teaching by introducing the problem as follows:[72]

"Methods of teaching change by a process of variation and survival of the fittest variations in the sense of those most fit to win the commendation of teachers, supervisors, and other educational authorities. Variations are due to the insights and experiments of persons actually engaged in classroom teaching and, increasingly in our time, to the insights and experiments of students of the science of education, including educational psychology.

The variations produced from these two sources have been, on the whole, of very great value, but both types have been accompanied by mistakes and excesses....."

He concludes his discussion by a statement which strikes the reader as an optimistic note:[73] "We may expect that in the future better analyses of just what happens in concrete uses of given methods of teaching will enable us to keep the good features of each without its defects and excesses."

While the justice of the foregoing criticisms as applied to much of the investigation in the field of teaching method must be admitted, the availability of a bibliography of more than 550 items concerned with research on so many problems of secondary method is encouraging. In preceding sections of this paper attention has been directed to findings on which there is reasonably satisfactory agreement and to major investigations completed or under way. Reference has been made to

[71] Freeman, F. N. "The Contribution of Science to Education," *School and Society*, XXX (July 27, 1929), 107-12.

[72] Thorndike, E. L. "The Need of Fundamental Analysis of Methods of Teaching" *Elementary School Journal*, XXX (November, 1929), 189-91.

[73] Thorndike, E. L. *Ibid.*, p. 191.

problems which require further investigation. In consolidating the results of progress already made in research dealing with problems of secondary method, and in effecting the improvement which should follow studies under way or to be undertaken in the near future, it seems reasonable to agree with Buckingham[74] that we should accept small gains and combine them for the purpose of producing large gains, and in this way work bit by bit toward the master method.

[74] Buckingham, B. R. "The Accumulation of Minute Advantages," *Journal of Educational Research*, XVI (September, 1927), 136-38.

IQ's AND THE OTIS' MEASURE OF BRIGHTNESS

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DR. Otis in his Primary and Advanced Tests of Mental Ability Manual recommends in the place of the IQ an Index of Brightness (IB) based on the differences between the score obtained by the child and the norm for his age. In his manual for his Self-Administering tests he recommends the identical method but calls the result an IQ instead of an IB. He justifies this procedure thus:

"Fortunately it happened that the variability of scores of both tests at each age was such that the median deviations of the distributions was approximately 8 points—just the value of the median deviation of IQ's by the Binet-Simon Test![1] This meant that the Index of Brightness by either the Higher or Intermediate Examination was directly comparable with the IQ by the Binet-Simon Test. That is an Index of Brightness of 108 denoted a percentile rank of 75 exactly as a Binet IQ of 108 did, and the same for other values.

"This being the case, it seemed best simply to call this new measure of brightness an "IQ" (although it is not a quotient, of course), because the term IQ is so widely used and because this measure of brightness is seemingly more closely related to Binet IQ's than actual quotients found by dividing Binet mental-age equivalents of scores in group tests by chronological age."[2]

If Dr. Otis had stuck to his original term of "Index of Brightness" there would be less cause for protest, but since Otis' "Binet IQ Equivalents" are neither quotients nor, at least according to our data, equivalent to the Stanford-Binet IQ the term does not appear to be justified. Dr. Otis has stated his objection to the use of the term IB in connection with his Self-Administering tests. In order not to confuse this measure with the IB for his other group tests and to be able to compare the real Otis IQ, Otis' measure of brightness, and the Stanford-Binet IQ without a confusion of terms, the term Otis ib in lower case letters, will be used and the term "Otis IQ" will be given its well established meaning of

[1] Stanford Revision.

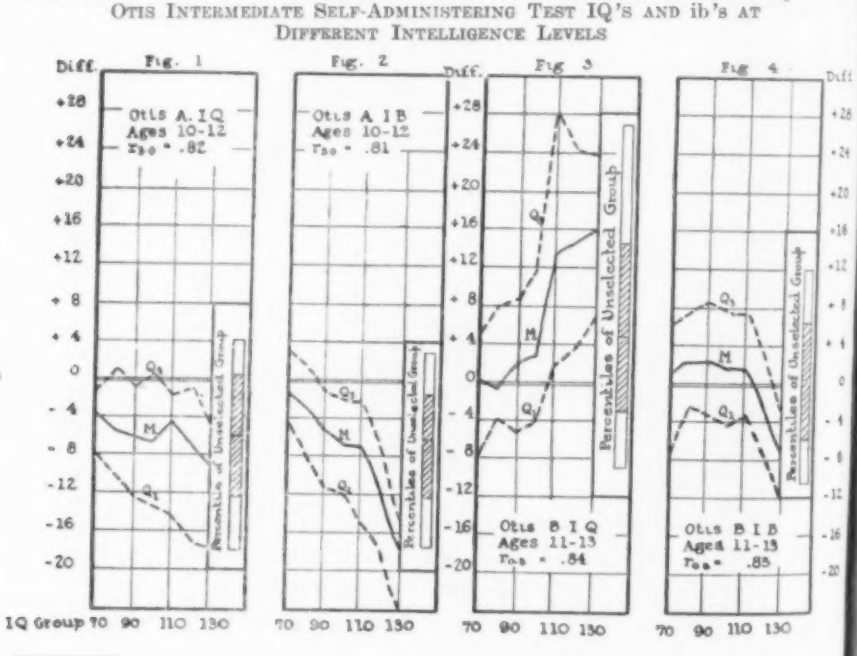
[2] *Statistical Methods in Educational Measurements* (Yonkers, New York: World Book Co.), p. 156.

the quotient obtained from the division of the mental age by the chronological age.

The records of 322 children who had been given the Otis Self-Administering Intermediate Examinations Form A and Form B and at least two Stanford-Binet Examinations were selected at random from the files of the Harvard Growth Study made available to the writer through the kindness of Professor W. F. Dearborn.[3] The Binet IQ's were averaged and used as a basis of comparison. The Pearson correlations between the Binet IQ and Otis IQ and between the Binet IQ and Otis ib were +.82 and +.81, respectively for Form A, and +.84 and +.83 for Form B; a difference of one point in favor of the Otis IQ as against the ib in each instance.

When the Otis IQ's and ib's were compared with the actual Stanford Binet IQ's some striking results were brought to light. The 322

DIFFERENCES BETWEEN THE AVERAGE OF TWO OR MORE STANFORD-BINET IQ'S AND OTIS INTERMEDIATE SELF-ADMINISTERING TEST IQ'S AND ib'S AT DIFFERENT INTELLIGENCE LEVELS



[3] At the time Form A was given the children were between the ages 10 and 12. Otis B was given to the same children the following year. One of the Binet tests was given two years after Otis B and the others at various times between first and sixth grades.

cases were divided into seven IQ groups according to the average of the Binet IQ's, 79 and under, 80-89, 90-99, 100-109, 110-119, 120-129, 130 and over, with frequencies of 26, 50, 68, 64, 53, 36, and 25 respectively. The median and quartile points of the differences between the Otis and Binet IQ and between the Otis ib and the Binet IQ were calculated for each IQ group and plotted in Figures 1 to 4. The vertical scale represents the amount by which the Otis ib or IQ fell short of or exceeded the Binet IQ, the horizontal scale at the foot indicates the Binet IQ groups. The vertical bars to the left gives the 10th, 25th, 50th, 75th, and 90th percentile points of the differences of an unselected group.

The center curve of Figure 1 giving the median differences between Otis Form A and Binet IQ's shows that at all the Stanford-Binet IQ levels the Otis IQ tends to be about six points lower than that of the Binet. No improvement is seen in the curve for the Otis ib's (Fig. 2), but instead a marked downward trend not seen in the IQ's and at the two highest intelligence levels the median differences between the Binet IQ and Otis ib is −11 and −18 points, considerably larger than the differences between the Binet and Otis IQ. If the Stanford-Binet IQ is taken as the standard the Otis IQ on Form A gives more accurate results than the Otis ib.

In Figure 3 are plotted the IQ's for Form B. The median of the unselected group is four points higher than the Binet as against 6 points lower in Form A, making a difference of 10 points between Forms A and B. The general trend of the median differences between the Binet and Otis B IQ falls in with Otis' claim (or would if the whole curve were stepped down four points). The dull children test approximately the same on the Otis and on the Binet scale, while the brighter children test considerably higher. In this Form the median differences between the Otis ib and Binet IQ (Figure 4) are appreciably less than the median differences between the Binet and Otis IQ's. This is, however, not due to the superiority of the ib over the IQ but to differences in the standardization of the Binet and Otis Tests. The Otis ib is lower than the Otis IQ when it is above 100, and higher when it is below 100. Above the mental age of 11 the substitution of the ib for the IQ reduces the higher IQ's to a much greater extent than it lowers the low IQ's. For example, as calculated from Table III on page 6 of Otis' Manual a child with a CA of 12-6 and a score of 23 (18 points below the norm) has an ib of 82 and an Otis IQ, calculated by the conventional method, of 80, a difference of plus 2 points. but if his score is 59 (18

points above the norm) his ib is 118 and his Otis IQ 144, a difference of minus 26 points.

According to the Stanford-Binet, Form B of the test gives a median Otis IQ four points too high in the unselected group and over 12 points too high at Binet IQ levels above 110. Therefore, since the ib's are lower than the Otis IQ's in general, and markedly so at the upper intelligence levels, the ib gives medians nearer to that of the Stanford-Binet IQ. The opposite result was found for Form A. The median IQ was below that of the Stanford-Binet IQ at all intelligence levels and the ib still lower, especially at the upper intelligence levels.[4]

The old method of calculating the IQ used by Dr. Terman in his *Measurement of Intelligence* is said to give IQ's which are proportionately lower for the bright than for dull pupils at the upper ages, due to the fact that the bright children do not have an equal opportunity to demonstrate their highest ability. In order to correct this error, Dr. Terman has more recently introduced a modified method of determining the IQ for the upper mental ages.[5] In the present study the old method was used if the corrections had been applied most of the Binet IQ's in the 130 IQ group and many in the 120-group would be raised. In spite of this, in the 130 IQ group every ib for both forms of the test was, with one exception, lower than the Stanford Binet IQ. If the new method of calculating the Binet IQ's had been used the already marked differences between the Binet IQ's and the Otis ib's would be still greater.

Otis gives two methods for calculating his ib which he describes as follows:

"Add to 100 the number of points by which a pupil's score exceeds the norm for his age, or subtract from 100 the number of points by which a pupil's score falls below the norm for his age....A second method of finding an IQ is to plot the score of the individual in the appropriate Interpretation Chart by placing a dot on the horizontal line representing his score and on the vertical line representing his age. If the dot falls on a curve the IQ of the individual will be stated at the end of the curve in the IQ column to the right."

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[4] In fairness to the Otis tests it should be stated that it has been found that it is a frequent phenomenon for the difference between the Stanford-Binet and group test IQ's to vary according to the intelligence level of the child. Some group tests give IQ's that are lower for the bright and higher for the dull. This, however, does not affect the main purpose of the present study which is to demonstrate that the use of the ib, especially when it is termed "IQ", not only causes confusion but actually gives results which are not comparable to the IQ.

[5] Terman, Lewis M. *Genetic Studies of Genius.* I, p. 42.

In the foregoing study the ib's were calculated by the first method.

Dr. Otis writes that while the norm for adults is usually taken at 16 in the Binet tests:

"There is a growing opinion among psychologists, however, that the Binet Mental Age which is the norm for adults is appreciably lower than 16 years .... For this reason IQ's (here termed ib's) obtained by the method provided herein may be slightly higher than those obtained by the Binet scale for older students, but it is believed that they more nearly correspond with the Binet IQ's of these students when they were younger."

In his Interpretation Chart he steps up the IQ with the purpose of taking care of this point, but has left the scale of "MA's" on the margin of the chart as he estimated the equivalents of Binet mental ages when obtained by Dr. Terman's unrevised method. This is confusing to the school man who has been taught that a child's IQ is below one hundred when the CA is above the MA and above 100 when it is below. For example, in the Interpretation Chart for the Higher Examination a boy of 16-0 made a score of 40 points. If on the chart we look across to the column "Binet MA" the mental age will be found to be 15-0, following the IQ line corresponding to an MA of 15-0 and CA of 16-0 his IQ will be seen to be 101, even though his MA is lower than his CA. A child with both a mental and chronological age of 16 will be found to have an IQ of 106.

CONCLUSIONS

1. Comparisons of the differences between the IQ's obtained from the intermediate forms of the Otis Self-Administering test and the Stanford Binet indicate that the differences are caused by variations in the standards rather than by differences in the range of IQ's obtained by the different tests.

2. The ib proposed by Otis for equating the Otis IQ to that of the Stanford-Binet does not increase the comparability of the two tests.

3. Otis' Interpretation Chart for deriving the ib for the Higher Examination gives results which are confusing. An MA may be obtained which is below the child's CA and yet from the same chart his "IQ" may be found to be over 100.

PROCEDURE IN ANALYZING PROGNOSIS TESTS

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As part of an investigation of methods of selecting prospective teachers for training, it became necessary for the authors to construct two prognosis tests of teaching ability. One is known as "Teachers Interest Test" and the other as a "Prognosis Test for Prospective Teachers." This article gives the procedure used in studying these tests. Questions concerning reliability and validity, particularly the latter, must be left for a later and much longer discussion.

These tests, and five others, were given in the fall of 1927 to all students entering the New York State normal schools and to students in about half of the training classes. (The training classes are one- or two-year institutions that prepare teachers for the rural field.) Criteria for validating these tests will consist of the teachers' marks at the end of each semester, the results of general objective examinations given to all students, the rating on practice teaching, and the rating on teaching following the completion of training. The whole investigation will, therefore, cover a period of four or five years.

The intelligence and achievement tests used in this study had presumably been analyzed and revised before being published. The two newly constructed tests had not, however, undergone this procedure. Since the analysis and revision of a prognosis test involves a peculiar technique, it is of interest to the research public to follow the steps: first, the determination of the difficulty of the individual items; second, an analysis of the test, item by item, in the light of these data; third, the elimination or revision of items in the test on the basis of this analysis; and fourth, a statistical comparison between the original and revised form.

The Teachers' Interest Test consisted originally of 110 true-false statements concerning teaching practices and classroom procedure. The underlying idea is that the student entering the normal school has had, as a pupil in the elementary and high school, opportunity to observe classroom procedure, and that the student's interest and probable ability in teaching may be measured by the extent and accuracy of the observa-

tions he has made. A few of the true-false statements in the test illustrate its nature:

1. The assignment of the new lesson should include suggestions for studying it effectively.
2. A question which implies the answer is a good question.
3. All subject matter in the lesson is of equal value.
4. Children do not need to know the goal of the lesson.
5. The class should be divided into groups on the basis of ability.

The first step in analyzing this test was to determine the difficulty of each question. To decide the number of papers which it was necessary to tabulate, the following procedure was followed: thirty papers taken from three of the normal schools were tabulated so as to show how many times each question was answered correctly. Since this test is of the true-false type and the score was the number right minus the number wrong, the omissions for each question were also tabulated. Knowing the number of times each question was marked right, or was

TABLE I

DISTRIBUTION OF THE DIFFICULTY OF THE QUESTIONS IN THE TEACHERS' INTEREST TEST

Index of Difficulty (1)	Number of Questions	
	Before Elimination (2)	After Elimination (3)
1.00 —	3	—
.90 — .99	21	18
.80 — .89	18	18
.70 — .79	7	7
.60 — .69	9	9
.50 — .59	6	6
.40 — .49	4	4
.30 — .39	8	8
.20 — .29	3	3
.10 — .19	6	4
0 — .09	3	3
—.10 — —.01	2	2
—.20 — —.11	2	2
—.30 — —.21	3	3
—.40 — —.31	4	4
—.50 — —.41	5	4
—.60 — —.51	2	2
—.70 — —.61	1	1
—.80 — —.71	2	2
—.90 — —.81	1	—
Total	110	100

omitted, made it easy to determine how many times it was marked wrong. In order to eliminate the factor of chance an index of difficulty for each question was determined by subtracting the total number of times wrong from the total number of times right and dividing the difference by 30. Minus as well as plus indices were retained for possible significance in interpretation.

Then another 30 papers were tabulated in the same way and the same data computed for the entire 60 papers. This process was repeated with 30 papers at a time, until it was found that the difficulty of the items was not materially changed by adding an additional 30 papers.

This point was reached after the tabulation of 120 papers. The mean difference of the indices between the first 30 papers and the first 60 was .07; between the first 60 and the first 90 was .04; and between the first 90 and the 120 was .03. It did not seem that the tabulation of more papers would have materially changed the conclusions.

Table I shows the distribution of difficulties of questions in the Teachers' Interest Test as determined by the first 120 papers. Column 1 gives the indices of difficulty determined as previously explained; column 2 shows the distribution before elimination; and column 3 shows the distribution after elimination. It is apparent from column 2 that there are a large number of easy items, a wide range of difficulty, and that there are twenty-two items which are more often marked wrong than right.

In making eliminations six of the easiest items were first omitted. All items which had a negative difficulty score were carefully examined to determine whether the difficulty was in the wording of the item or in the lack of knowledge of good teaching. The number of omissions was negligible, and the few that were found were so scattered that they were not considered. One item was eliminated because it was the most difficult. Two items were eliminated because there was extreme variation in difficulty with the addition of each 30 papers. One other was omitted because of doubtful meaning. All other items seemed to contain legitimate difficulties. Column 3 of Table I shows the distribution of difficulty indices in the Teachers' Interest Test after the elimination of these ten items.

One might question the advisability of including items which are generally answered wrongly. In an achievement test, one would suspect immediately that something was radically wrong with such items. In a prognosis test, however, where the students are not expected to have

learned the subject matter before hand, items cannot be criticized on this basis. It was thought, after each item was carefully studied, that such items were a distinct advantage; that knowledge of subject matter gained in other ways than through specific instruction had a real prognostic value.

A few illustrations may make this conclusion more clear. The following item had a difficulty score of —.80, which means that 108 pupils out of 120 marked it wrong and none omitted it.

———— 60. Knowledge of the rules of grammar helps very little in correct speech.

This was considered a true statement in the key, but was generally considered false by the students. An understanding of the issues involved should certainly be gained in normal school, but if the entering student has gained this understanding we may assume that (a) previous experience has been favorable to the development of an educational sense; and, (b) she is better able to grasp and profit by the normal school instruction than the student who does not have this background.

The following item had a difficulty score of —.79:

———— 79. Desks, especially those for primary children, should be fastened to the floor.

Those who answered this as true possibly had never been in or heard of a school where desks were movable. Again, a background of educational experience is indicated when the student can correctly answer items like this, which probably points to a greater readiness to take up teaching.

To compare the Teacher's Interest Test as it was originally, and as it appeared after the elimination of the ten questions, the scores for the 120 students were correlated both times. The coefficient of correlation between these two sets of scores is .970, which means that virtually the same result is obtained by a somewhat shorter and undoubtedly somewhat better test.

The Prognosis Test for Prospective Teachers consists of five parts. Part 1 is a test of general information. Part 2 is an information test in the field of educational subject matter. Part 3 consists of a series of eight lessons selected from the education work of the normal school course. Each lesson is followed by a test. Part 4 is a test of reading comprehension based on educational reading matter. Part 5 is a test dealing with educational problems.

Part 1 of this test is divided into three sections. The first section is of the short-answer type; the second of the true-false type; and the

third of the multiple choice type. Part 2 is also divided into three sections. The first is of the true-false type; the second the multiple choice type; and the third is also of the true-false type. The difficulty of the items in this test was determined as follows: For those sections which are of the true-false type, the procedure was the same as with the Teachers' Interest Test described above, namely, the number of correct responses minus the number of incorrect responses, divided by the total number of papers tabulated. For the multiple choice and short answer sections the percent correct was computed to represent the difficulty of the items. For Parts 3, 4, and 5 the scores for the lessons, reading paragraphs, or problems in each part were averaged and the mean divided by the total possible score. This percent correct was used as the difficulty index.

For the Prognosis Test the papers were tabulated by groups of 30 as in the case of the Teachers' Interest Test and the change in difficulty for each additional 30 was noted. It was found that after 120 papers were tabulated the difference in difficulty was sufficiently small to indicate that the greater accuracy resulting from tabulation of more papers

TABLE II

DISTRIBUTION OF THE DIFFICULTY OF THE QUESTIONS IN THE PROGNOSIS TEST FOR PROSPECTIVE TEACHERS

(Before any questions were eliminated)

Index of Difficulty	Test								
	1A	1B	1C	2A	2B	2C	3	4	5
.90 — .99	1	1	8		1	2			
.80 — .89	6	3	8	1	4	4	2	1	
.70 — .79	6		7	3	3	3	1	2	1
.60 — .69	4	3	4	1	3	2	1	1	1
.50 — .59	1	3	3	4	4		1		1
.40 — .49	2		7		3	1	2	1	2
.30 — .39	3	3	3		3	2	1	2	1
.20 — .29	6	3	3		2	1	1		
.10 — .19	1	1	1	1	3	2			
0 — .09	5	1		3	1				
—.10 — —.01		2							
—.20 — —.11						2			
—.30 — —.21									
—.40 — —.31		2							
—.50 — —.41				1					
—.60 — —.51						1			
—.70 — —.61				1		3			
—.80 — —.71						1			
Total	35	22	44	15	27	24	9	7	6

was not enough to justify extra labor. The mean difference of the indices between the tabulation of the entire 120 papers and the tabulation of the first 90 is as follows: for Part 1, Section A, .017; Section B, .042; Section C, .017; for Part 2, Section A, .004; Section B, .015; Section C, .033; Part 3, .001 point; Part 4, .0008 point; and Part 5, .0007 point. These extremely small differences are clear evidence of the fact that very little would have been gained in the way of accuracy by further tabulation of test papers.

Table II shows the results of the tabulation giving the difficulty of the questions in each part of the test for the entire 120 papers that were tabulated. There is, on the whole, a satisfactory variation in difficulty except in Part 2, Section A, where there appears a gap in the lower half of the distribution, and in Part 1, Section A where there is an overweighting of very easy and very difficult items.

In general, this table shows a fairly good variation in the difficulty of the questions in each part of the test. Eliminations were made so that excessive numbers of easy or hard questions were reduced. A study of individual items showed, as in the case of the Teachers' Interest Test,

TABLE III

DISTRIBUTION OF THE DIFFICULTY OF THE QUESTIONS IN THE PROGNOSIS TEST FOR PROSPECTIVE TEACHERS

(After certain questions were eliminated)

Index of Difficulty	Test								
	1A	1B	1C	2A	2B	2C	3	4	5
.90 — .99	1	1	7		1	2			
.80 — .89	5	3	8	1	4	4	2	1	
.70 — .79	5		7	3	3	3	1	2	1
.60 — .69	4	2	4	1	3	2	1	1	1
.50 — .59	1	3	3	4	4		1		1
.40 — .49	1		5		3	1	2	1	2
.30 — .39	2	3	2		3	2	1	2	1
.20 — .29	3	1	3		2	1	1		
.10 — .19	1	1	1		3	2			
0 — .09	2	1		3	1				
—.10 — —.01		1							
—.20 — —.11						1			
—.30 — —.21									
—.40 — —.31									
—.50 — —.41				1					
—.60 — —.51						1			
—.70 — —.61				1		1			
Total	25	16	40	14	27	20	9	7	6

that for certain questions percentage of correct answers varied considerably from one sampling of 30 papers to the next. Such questions were considered unsatisfactory and were eliminated.

Table III shows the distribution of the difficulty of the questions after certain ones were eliminated. The distributions in Table III do not at first glance appear to be appreciably different from those in Table II. No eliminations were made in Parts 2B, 3, 4, and 5. A careful reading of the other distributions will indicate the effect of the elimination on them. As a result of taking out 25 questions in all, the test has undoubtedly been improved to an appreciable extent.

To compare the Prognosis Test as it was originally and as it appeared after the elimination of the 25 questions, the two sets of scores for the 120 students were correlated. The coefficient of correlation between these two sets of scores is .980, which means that, virtually, the same results are obtained by a slightly shorter and undoubtedly somewhat better test.

Because of these revisions, will it be necessary to recount the scores on the Teachers' Interest and Prognosis Tests before they are validated against the criteria? If a recounting of the scores will not lead to greater accuracy, there will be a great saving of time to use the original data. The question may be answered by computing the intercorrelations among the Teachers' Interest Test and the parts of the Prognosis Test for both the original and revised forms. Table IV gives the intercorrelations. Section A, the upper half of the table, shows the intercorrelations among the original Teachers' Interest Test and the five parts of the Prognosis

TABLE IV

INTERCORRELATIONS AMONG TEACHERS' INTEREST TEST AND PART OF THE PROGNOSIS TEST FOR PROSPECTIVE TEACHERS

A—Before certain items were eliminated.

	Prognosis 2	Prognosis 3	Prognosis 4	Prognosis 5	Teachers' Interest
Prognosis 1	.221	.340	.414	.341	.348
2		.266	.229	.305	.321
3			.387	.336	.439
4				.352	.310
5					.448

B—After certain items were eliminated

	Prognosis 2	Prognosis 3	Prognosis 4	Prognosis 5	Teachers' Interest
Prognosis 1	.348	.394	.404	.337	.391
2		.282	.246	.333	.329
3			.387	.336	.466
4				.352	.350
5					.427

Test for 120 papers. Section B, the lower half of the table, shows the corresponding intercorrelations for the scores on the revised tests. The mean difference between the correlation coefficients is .026. The largest difference is .127. All the other differences are less than .055.

These differences are negligible except for the one difference of .127. But these correlations are all so low that even that difference would hardly affect the results. A multiple correlation of these tests with a criterion would hardly vary enough between the two sets of intercorrelations to make it advisable to go through all the work of computing the scores for the revised tests for the entire 3,000 papers.

SUMMARY

The above is an attempt to describe the procedure in analyzing and revising a test used for purposes of prognosis. The technique is somewhat similar to the analysis and revision of an achievement test. It is more closely allied to the procedure in analyzing an intelligence test, since a prognosis and an intelligence test are alike, and are limited to a specific field both in function and in content. The difference in procedure lies, not so much in the statistical operations, as in their interpretation.

The steps in the analysis and revision of a prognosis test are:

1. Determination of the difficulty of the questions.
2. A study of the test and an interpretation of the data in the light of the purpose of the test.
3. The elimination by revision of items in the test on the basis of this interpretation.
4. A statistical comparison between the original and revised forms.

The validation of a prognosis test is another procedure quite different from the analysis of the test and is, therefore, not treated here.

AMERICAN INTEREST IN FOREIGN EDUCATION A CENTURY AGO

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CUBBERLEY writes, "It was not until the twenties that our educational literature began, and not until the decade between 1835-1845 that we really began to learn, for the first time, what was being done on the continent of Europe in the matter of organizing instruction."[1] Some twenty pages later this statement is contradicted with the assertion that schools similar to that of Fellenberg were established in New England as early as 1819.[2] An examination of the contemporary writings on education establishes even further the fact that we were well aware of what Europe was doing about the organization of instruction years before 1835.

Griscom had published his *Year in Europe* in 1820, and in the *North American Review* for January, 1824, there appeared a briefer report by the same author and dealing in part with educational matters. At that time there were many American students in European Universities. "It is a subject of congratulation among us that so many of our scholars have of late years attended the schools of Germany."[3] At the University of Göttington there were thirty-one American students in the period 1820-35.[4] It is difficult to believe that these students were silent about European education. *The American Journal of Education*, in its first year (1826), carried articles on the following subjects:

1. The French Academy of Instruction.....p. 54
2. The College of Scio (Greece).....p. 80
3. Monitorial Schools in Europe.....p. 121
4. The City of London Infant Schools.....p. 122
5. Education in Buenos Ayres.....p. 122
6. The University of London.....p. 184
7. Education in the Highlands of Scotland.....p. 184
8. Primary Schools in Holland.....p. 184
9. The University of Edinburg.....p. 247
10. Mechanical Instruction in England.....p. 251

[1] Cubberley, E. P. *Public Education in the United States*, p. 260.
[2] *Ibid*, p. 279 f.
[3] *National Intelligencer* (Washington, D. C.), October 20, 1823.
[4] *Colony Book of Göttington University.* Cited in Hinsdale, Notes on Foreign Influence etc., U. S. Comm. Educ. Report, 1897, i, p. 610.

11. Mechanical Instruction in France.....p. 251
12. Instruction in Peru.....p. 252
13. Instruction in Mexico.....p. 375
14. Education in India.....p. 381
15. Practical Education on the Continent of Europe.....p. 441
16. Academy Education in England.....p. 524
17. The Grammar Schools of Glasgow, Scotland.....p. 571
18. Education in Lower Canada.....p. 690
19. The Progress of Education among the Hottentots.....p. 691

Our early interest in foreign education was further evidenced in the establishment of a number of schools plainly showing German influence. Cubberley himself states, as was indicated above, that schools "drawing their inspiration from the very successful school of Fellenberg" were started in New England as early as 1819.[5] In 1825 an institution entitled the Fellenberg School was established in Winsor, Connecticut, "in which are taught horticulture, agriculture, (etc.)—under the superintendence of S. S. Stebbins and E. N. Still—."[6] The Round Hill School (established 1823), the Berkshire Academy (established 1827), and the Mount Pleasant Institution (established 1827) were also influenced by German practices.

It was not uncommon in prospectuses for new seminaries to see something like the following, "Both of us have had the privilege of surveying many of the principal seminaries of Europe; and one of us, during a long residence in Europe, examined with the utmost attention and care the system of education pursued in several of her universities, and in her academic and commercial gymnasia."[7]

A number of years before 1835 European ideas, in connection with proposed universities, were brought forward. "The feeling is very general in the United States that we need a university like those of Germany."[8] At the Convention of Scientific and Literary Gentlemen held in New York in 1830 papers were read dealing with education in Germany, France, and Switzerland. Reference to the French Society of Education was made during the twenties. Educational leaders advocated that a similar one be established in the United States.[9] According

[5] Cubberley, E. P. *op. cit.*, p. 279.

[6] *National Intelligencer*, January 4, 1831.

[7] *American Journal of Education.* III (1828), p. 115. Prospectus "New Haven Gymnasia."

[8] *Proceedings of Convention of Scientific and Literary Gentlemen* (1830), p. 141.

[9] *American Journal of Education*, I (1826), pp. 485-489.

to one writer of the early thirties, it was not a matter of not knowing what Europe was doing in education, but rather of being too anxious to follow her lead.[10]

The citizens of the United States knew about educational occurrences in Europe as soon as the newspapers from London and Paris were brought to this country. We were interested in European education years before our own educational literature had developed, and in no sense does the year 1835 mark the beginning of this interest.

[10] *Proceedings of the American Institute of Instruction* (1831), p. 5.

SHORTER ARTICLES

A METHOD OF CONSTRUCTING USEFUL DIVISION TABLES

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IN research work it often happens that there is a need for the division of many numbers by the same divisor. In case these numbers are made up of not more than two digits, Holzinger's tables prove to be a fairly rapid means of making the divisions. To use these tables when the dividend possesses more than two digits involves several operations.

For example, to find the value of 341/14, it would be necessary to find either $300/14 + 41/14$ or $340/14 + 1/14$. Since the tables are arranged according to the size of dividends rather than the size of divisors, such divisions as these must be obtained by referring to two or more sections of the tables, sometimes on widely separated pages. This is time consuming.

If a calculating machine is at hand this will be found to be a very economical method of making such divisions. On several occasions, however, when it has been necessary to divide many numbers of three or more digits by a common divisor of two digits, it has been found economical to construct a table from which quotients can be read directly. If there are several hundred divisions to be performed, such a table can be constructed and the divisions made by its use in less time than they can be made with Holzinger's or Crelle's tables or with some calculating machines. In the hope that the method of constructing such tables may prove useful to others, it will be illustrated and briefly explained.

Suppose we have several hundred such numbers, each to be divided by 14. By use of a calculating machine, Holzinger's tables or another method, divide each number from 0 to 13, inclusive, by 14, carrying the division to as many decimal places as is desired in each of the quotients. Holzinger's tables give quotients to four decimal places. Arrange these quotients across the top of a sheet of squared paper as shown by the numbers in heavy face type in Table I. On a table written by hand, it is well to have these decimals in red ink.

The body of the table consists of numbers in consecutive order across the sheet, from zero to the largest number you have to divide. Begin the first row with zero and each succeeding row with the next higher number. If the largest number to be divided is more than 100 times the divisor extend the table only through the row in which 99 appears as the whole number in the quotient. Other numbers can be divided readily by the same table, as will be shown presently.

The whole number in any quotient is indicated by the column on the left. This column consists of a consecutive numbering of the rows in the

TABLE I

SHOWING THE CONSTRUCTION OF A TABLE TO FACILITATE THE DIVISION OF ANY NUMBER BY 14

Whole Number in Quotient	Decimal Part of Quotient														Additional Quotients for Larger Numbers
	.000	.071	.143	.214	.286	.357	.429	.500	.571	.643	.714	.786	.857	.929	
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	1400–99..., 100
1	14	15	16	17	18	19	20	21	22	23	24	25	26	27	2800–99.., 200
2	28	29	30	31	32	33	34	35	36	37	38	39	40	41	4200–99., 300
3	42	43	44	45	46	47	48	49	50	51	52	53	54	55	5600–99, 400
4	56	57	58	59	60	61	62	63	64	65	66	67	68	69	etc.
5	70	71	72	73	74	75	76	77	78	79	80	81	82	83	
6	84	85	86	87	88	89	90	91	92	93	94	95	96	97	
7	98	99	100	1	2	3	4	5	6	7	8	9	10	11	1500–99..., 100
8	112	13	14	15	16	17	18	19	20	21	22	23	24	25	2900–99.., 200
9	126	27	28	29	30	31	32	33	34	35	36	37	38	39	4300–99., 300
10	140	41	42	43	44	45	46	47	48	49	50	51	52	53	5700–99, 400
11	154	55	56	57	58	59	60	61	62	63	64	65	66	67	etc.
12	168	69	70	71	72	73	74	75	76	77	78	79	80	81	
13	182	83	84	85	86	87	88	89	90	91	92	93	94	95	
14	196	97	98	99	200	1	2	3	4	5	6	7	8	9	1600–99..., 100
15	210	11	12	13	14	15	16	17	18	19	20	21	22	23	3000–99.., 200
16	224	25	26	27	28	29	30	31	32	33	34	35	36	37	4400–99., 300
17	238	39	40	41	42	43	44	45	46	47	48	49	50	51	5800–99, 400
18	252	53	54	55	56	57	58	59	60	61	62	63	64	65	etc.
19	266	67	68	69	70	71	72	73	74	75	76	77	78	79	
20	280	81	82	83	84	85	86	87	88	89	90	91	92	93	
21	294	95	96	97	98	99	300	1	2	3	4	5	6	7	1700–99..., 100
22	308	9	10	11	12	13	14	15	16	17	18	19	20	21	3100–99.., 200
23	322	23	24	25	26	27	28	29	30	31	32	33	34	35	4500–99., 300
24	336	37	38	39	40	41	42	43	44	45	46	47	48	49	5900–99, 400
25	350	51	52	53	54	55	56	57	58	59	60	61	62	63	etc.
26	364	65	66	67	68	69	70	71	72	73	74	75	76	77	
27	378	79	80	81	82	83	84	85	86	87	88	89	90	91	
28	392	93	94	95	96	97	98	99	400	1	2	3	4	5	1800–99..., 100
29	406	7	8	9	10	11	12	13	14	15	16	17	18	19	3200–99.., 200
30	420	21	22	23	24	25	26	27	28	29	30	31	32	33	4600–99., 300
31	434	35	36	37	38	39	40	41	42	43	44	45	46	47	6000–99, 400
32	448	49	50	51	52	53	54	55	56	57	58	59	60	61	
33	462	63	64	65	66	67	68	69	70	71	72	73	74	75	
34	476	77	78	79	80	81	82	83	84	85	86	87	88	89	
35	490	91	92	93	94	95	96	97	98	99	500	1	2	3	

etc. The table may be extended downward in this same manner as far as necessary. It will never be necessary to extend it beyond the point where the whole number in the quotient is greater than 99. In this table the largest dividend necessary would be 1399. For numbers larger than this use that section of the table opposite the proper "hundreds" in the right margin. Add the "Additional Quotient" to the quotient as read from the table.

body of the table from 0 to 99, inclusive, or if the table is not extended this far, then each row included is numbered. It is well to have these numbers also in red ink if the table is written by hand.

When the table must be extended more than twenty-five or thirty rows, it has been found useful to split the table and insert a repetition of the decimal quotients so the eye will not have to follow up the page so far. The same principle applies to reinserting the column of "Whole Number in Quotient" within or to the right of the table if the table is quite wide.

Some examples will make it clear how the table is used. To divide 341 by 14, first find 341 in the body of the table. The whole number in the quotient at the left of the row containing 341 is 24. The decimal part of the quotient at the top of the column containing 341 is .357. Therefore, 341 divided by 14 is 24.357. Of course, if a decimal were included in the dividend the digits in the quotient would be the same, except the decimal point in the quotient would have to be adjusted. For example, if the problem were to divide 3.41 by 14 the correct answer would be .24357.

When the number to be divided is between 1400 and 1499 the quotient will be the same as that for the number which is 1400 less, except 100 will be added to the quotient. For example 81 divided by 14 is 5.786. Therefore, 1481 divided by 14 equals 105.786. For numbers between 2800 and 2899 one must add 200 to the quotient as found for the number which is 2800 less than this number. The series of "Additional Quotients for Larger Numbers" to the right of the main table shows the numbers which should be added to the obtained quotients and also in which section of the table the divisions should be made. The 1400's, 2800's, 4200's, etc., must be divided in the 0 to 99 section of the table and the additional quotient of 100, 200, 300, etc., added to the quotients as read from this section of the table. The 1500's, 2900's, 4300's etc., must be divided in the 100-199 section of the table. All of these larger numbers are placed to the right of that section of the table in which the divisions must be made. The table is not as complicated to use as its verbal explanation would make it seem. With little practice quotients may be read off very rapidly.

Perhaps this table would not be such a labor saving device if the numbers to be divided were very long, say six, eight, or ten digits in length, unless they were well concentrated in a certain section of the

table. Too much time would need to be consumed in constructing the table. Neither would one save time by constructing such tables for the division of many numbers by a variety of different divisors. On the other hand, within the limits suggested, the division of numbers of less than five digits by a common divisor often may be greatly facilitated by the use of such a table.

WHAT EFFECT DO VISITORS HAVE UPON THE RECITATION?[1]

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ONE would expect good teaching in a demonstration school where each teacher is an expert in her particular field, where the pupils are possibly more intelligent than pupils in public schools, and, what is more significant, where they have often had the advantage of good teaching from the very beginning of their school career.

Some people feel, however, that a demonstration school has certain conditions, with which it has to contend, that make superior teaching impossible. The condition most often mentioned is a result of the aim of the demonstration school, which is a place where teachers-in-training may observe the teaching process. Some maintain that this observation hinders teaching.

During three different six-week periods an accurate count was kept of all visitation in the demonstration school of a southern teachers college. In each six-week's period the number approached 3000. What effect does visitation on such a large scale have on instruction? Do pupils respond as well when visitors are present? The writers attempted to answer this problem in the following manner:

Six classes were observed (one of the writers acting as observer) in the demonstration school of a southern teachers college for a total of fifty-eight days during the study of a specific unit of work. One unit of work was in the fourth grade, two were in the fifth, two in the eighth, and one in the eleventh. The fourth- and fifth-grade units were in the social studies, the eighth-grade units were in English, and the eleventh-grade unit was in mathematics. During the observations, the amount

[1] Based upon a Master's thesis at Peabody College.

of activity for each pupil in each period was checked and also the number of visitors present. Activity, as used in this study, is the total number of times a pupil volunteered and the number of questions he answered.

The number of visitors per period ranged from one to eighty-five. The daily amount of activity and the number of visitors for each unit are given in Table I.

TABLE I

AMOUNT OF ACTIVITY AND NUMBER OF VISITORS BY DAYS

Day of Observation	Unit 4		Unit 5		Unit 5A		Unit 8		Unit 8A		Unit 11	
	A*	V	A	V	A	V	A	V	A	V	A	V
1	25	1	44	1	52	1	48	3	34	13	54	4
2	32	1	52	3	92	85	65	6	32	14	48	2
3	34	2	33	1	82	80	58	10	61	10	49	2
4	39	3	49	5	58	2	18	3	67	5	51	5
5	38	3	42	4	59	2	29	6	67	10	51	4
6	41	6	63	8	73	5	60	7	46	10	33	1
7	32	1	64	11	67	3	74	6	36	5		
8	29	1	38	2	62	2	86	11	21	3		
9	43	7	31	1			37	2	25	2		
10	35	4										
11	34	3										
12	41	9										
13	29	2										
14	33	1										
15	31	1										
16	37	3										
17	38	3										
Mean	34.7	3	46.2	4	68.1	22.5	52.7	6	43.2	8	47.7	3

* A = Amount of activity
V = Number of visitors present

In every unit except one the greatest amount of pupil activity occurred on the day when the largest number of visitors were present. That one exception was unit 8A. The work of that unit was planned in such a way that on some days a large amount of pupil activity was impossible. The other units were taught so that there was no occasion for the amount of activity to vary greatly from day to day. In Table II the total correlations between pupil activity and the number of visitors present are given for each unit, the range being from $.23 \pm .21$ to $.89 \pm .05$. The correlations are high for every unit except 8A.

What is the significance of these tables? What does it indicate to have a large amount of pupil activity?

The National Intelligence Tests were given to the pupils in the

TABLE II

TOTAL CORRELATION COEFFICIENTS

Unit of Work	Activity and Test Grades	Test Grades and IQ	Activity and IQ	Activity and No. Visitors
4	.72 ± .06	.52 ± .09	.42 ± .11	.81 ± .06
5	.86 ± .03	.36 ± .12	.32 ± .14	.89 ± .05
5A	.74 ± .06	.44 ± .11	.18 ± .13	.70 ± .12
8	.50 ± .09	.31 ± .11	.43 ± .11	.70 ± .11
8A	.64 ± .08	—.16 ± .13	.09 ± .14	.23 ± .21
11	.77 ± .06	.43 ± .13	.48 ± .11	.77 ± .11

fourth, fifth, and eighth grades; the Otis Self-Administering Tests of Mental Ability, Higher Examination, Form B, were given to the pupils of the eleventh. At the conclusion of each unit the teacher gave an objective test on the work completed. This gave three measures for each student: 1. activity score; 2. intelligence score; and 3. test score. The total correlations between activity scores and test scores; activity scores and intelligence scores; and test scores and intelligence scores are given in Table II.

There is a positive correlation between activity scores and test scores in each of the units, the range being from .50 to .86. Between activity scores and intelligence scores positive correlations were found ranging from .09 to .48. The correlations between test scores and intelligence scores range from —.16 to .52. In each unit there is a higher correlation between activity and test scores than there is between activity and intelligence scores, or between test and intelligence scores.

TABLE III

PARTIAL CORRELATION COEFFICIENTS

Unit of Work	$r^*_{AT.I}$	$r_{TI.A}$
4	.65	.35
5	.84	.18
5A	.75	.46
8	.43	.12
8A	.67	—.28
11	.71	.11

*Explanation of subscripts:
A = Activity scores
T = Test scores
I = Intelligence quotients

The activity scores correlated high with the test scores, but the test scores, with one exception, also correlated high with the intelligence scores. Which, then, influenced the test scores? Was it the activity or the intelligence of the child?

By the use of partial correlations one factor was held constant so that the correlation of the other two might be determined. These partial correlation coefficients are shown in Table III. This table shows that in every instance there is a much higher correlation between activity scores and test scores with intelligence held constant than there is between intelligence and test scores with activity held constant. This means that the test grades were influenced more by the activity of the child than by his intelligence.

Objective tests are, perhaps, our best instruments for measuring the effectiveness of instruction. Therefore, numerous visitors mean more pupil activity, which in turn will give them higher test scores, and which indicate that children actually recite better in the presence of visitors.

HOW CONSTANT IS THE IQ YIELDED BY THE OTIS SELF-ADMINISTERING TEST OF MENTAL ABILITY

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THE problem in this investigation was to determine the constancy of the IQ yielded by the Otis Self-Administering Test of Mental Ability, Higher Examination. Since Symonds[1] pointed out that the forms of the test are not equivalent in difficulty, Form A was used, after an interval of about five months, for both the testing and re-testing of 212 pupils in public and private junior high schools in and near San Diego. The findings are summarized in tables. All statistical computations were checked twice with the aid of tables and a Monroe Calculation Machine to insure accuracy.

TABLE I

SUMMARY OF THE DISTRIBUTION OF INTELLIGENCE QUOTIENTS ON THE APPLICATIONS OF THE TEST

Test	Range		Mean	P.E.m	Standard Deviation	Coefficient of Variability
	From	To				
First	69	136	102.3	0.62	13.30	13.0
Second	61	150	104.8	0.65	14.02	13.38

The slight increase of the score on the re-test in the average IQ may be attributed to the practice acquired during the first test.

There are two methods of evaluating the amount of differences between the first and second series of scores without reference to the

[1] Symonds, P. M. "Measurement in Secondary Education" (New York: The Macmillan Company, 1927), p. 65.

method of correlation. The first method is determining the reliability of the difference between the mean scores for the two distributions of scores, and the second method is the comparison of percentile points throughout the two score ranges. The chances are approximately 92 out of 100 that the true difference between the mean IQ's (the difference between the true measures) is greater than zero, since the difference between the mean scores divided by the standard error of the difference is 1.42. Since a finding of 3.0 means practically complete reliability, we know that the finding of 1.42 is about 47 percent of what it should be in order to insure a difference always greater than zero. Table II presents the percentile points for the two distributions of IQ's.

TABLE II

COMPARISON OF THE PERCENTILE POINTS FOR THE TWO DISTRIBUTIONS OF INTELLIGENCE QUOTIENTS SUMMARIZED IN TABLE I

Percentile point	First test	Second test
100	136.0	150.0
90	119.3	123.7
80	114.8	117.4
70	110.3	113.0
60	106.8	108.9
50	103.3	105.3
40	99.7	101.7
30	95.3	97.6
20	90.9	93.1
10	84.9	86.9
0	69.0	61.0

Table II clearly shows that the slight difference noted between the mean scores for the two distributions of IQ's extends throughout the 10-90 range with almost uniform differences at each percentile point.

Table III summarizes the differences between the intelligence quotients yielded by the Otis test on the two applications.

TABLE III

SUMMARY OF THE DIFFERENCES IN INTELLIGENCE QUOTIENTS ON THE TWO TESTINGS

Test score difference	Number of cases	Range		Median	Quartile deviation
		From	To		
Gains	143	1	22	5.3	3.7
Losses	56	1	16	4.6	2.6
Same score	13				

The differences shown in Table III are greater than one could wish for in an investigation of this type.

The coefficient of correlation (Pearson r) for the 212 paired scores was a positive .83, probable error, .014. The coefficient of alienation that measures the absence of relation between two paired series in much

the same manner as the coefficient of correlation measures the presence of relationship was .558. There was, then, exact agreement in interval placement among the paired intelligence quotients yielded by the two applications of the test, 72.1 times in each 100. (The interval used was 10 IQ points.) The law of chance would show agreement 50 times in each 100 cases.

The findings are suggestive for further study of the reactions of pupils to this test. The writer would welcome duplication of the procedure in this investigation.

THE VOCABULARY COMMON TO CIVICS AND AMERICAN HISTORY

ORLANDO W. STEPHENSON AND WILLIAM ROY MCGEHEE

THERE are, doubtlessly, many teachers who have sought an answer to the question: How much overlapping is there in the vocabularies of Civics and American History? Two lists of words, published in the *Journal of Educational Research*, make possible a partial answer to this question. One list is in connection with a study entitled, "The Special Vocabulary of Civics,"[1] and the other in connection with a study entitled, "The Vocabulary of American History."[2]

The method used to determine the extent of the overlapping was that of comparing the words listed in the first of these studies with those listed in the second and then selecting from the two the words which were common to both. The words given below are the result of this process of comparison and selection:

ability	amend	assessment
activity	amendment	association
adjourn	Americanization	asylum
administer	amnesty	
administration	anarchy	ballot
administrative	antifederalist	belligerant
agency	appointee	borough
agent	appointment	boycott
aliens	apportion	bribe
alliance	appropriation	budget
ambassador	armistice	burgess
	arrest	

[1] Stephenson, O. W. "The Special Vocabulary of Civics," *Journal of Educational Research* (Nov., 1928), pp. 297-304.

[2] Barr, A. S., and Gifford, C. W. "The Vocabulary of American History," *Journal of Educational Research* (Sept., 1929), pp. 103-121.

capitalist
caucus
census
charter
circulation
citizenship
civilization
civilize
coinage
colonial
colonist
commissioner
commodity
commonwealth
communication
community
compensation
competition
conciliation
confederation
conference
congressman
conscription
conservative
consolidation
consul
constable
continental
consumption
convention
conviction
coöperation
criminal
currency

decision
declaration
delegate
democracy
democratic
dependence
dependency
dependents
deputy
diplomacy
diplomatic
domain

economics
education
efficiency
elective
elector
electoral
emancipate
emancipation
emigrant
eminent
employee
employer
employment
enact
enactment
endorse
enforcement
enfranchisement
engineer
enterprise
equality
excise
execute
execution
executive
exempt
expansion
export
extension

federal
federalist
feudal
finance
financial
fortification
freedom
function

governmental
graft

habeas corpus
highway
homestead

ideal
illegal
illiterate
immigration
impeach
impeachment
imperialism
improvement
inaugurate
income
indemnity
independence
indictment
industrial
inheritance
initiative
injunction
inspection
inspire
institution
intelligence
intelligent
intention
internal
international
interstate
investigate
investment

judicial
judiciary
jury
jurisdiction

leadership
legal
legislation
legislative
legislator
legislature
leisure
levy
liability
license
loyal
loyalty

magistrate
manager
marshal
martial
mechanical
merchant marine
metropolis
militia
minority
monarch
monarchy
monopoly
mortgage
municipal

nationality
nationalize
naturalization
naval
navigate
navigation
nominate
nomination
nominee
nonpartisan
null

obedience
obligation
offender
ordinance
organization
organize

pacifist
parish
parliament
partisan
partnership
patriotism
pension
petition
platform
policeman
political
politician
poll
post-master
post-master-general
postal
presidency
primary
proclamation
production
progressive
prohibition
promote
promotion
propaganda
prosperity

qualifications
quorum

ratification
ratify
ratio
reciprocity
reclamation
recreation
reëlect
reëlection
referendum
reform
registration
repeal
representation
republican
resources
responsibility
revenue
revision
revolution
sanitary
sanitation
sectionalism
sedition
senator
session
socialist
sovereign
sovereignty
speculation
statehood
statute
suffrage
supreme

tariff
taxation
taxpayer
tenement
territorial
toll
township
transportation
treason
treasurer
treasury
treaty
tyranny

unconstitutional
urban
utility

verdict
veto
vocational
void

warrant
waterway
welfare
writ

A count will show that there are 283 words in the above list. It may be said, therefore, that more than one-third of the 728 words in "The

Special Vocabulary of Civics'' go to make up the 1891[2] words in ''The Vocabulary of American History''; or, looking at it from the other direction, nearly one-sixth of the words in the latter list are also to be found in the former. One conclusion which seems safe to draw from these facts is that, if pupils acquire a thorough understanding and mastery of the words listed in ''The Special Vocabulary of Civics,'' the problem of vocabulary incident to the study of American History, which might follow a course in Civics, has, in part at least, been solved. Similarly, a thorough understanding and mastery of the words listed in ''The Vocabulary of American History'' assures an understanding and mastery of a large percent of the words in ''The Special Vocabulary of Civics.'' It would seem probable, moreover, that the civic concepts, of which the words in ''The Special Vocabulary of Civics'' are nucleuses, will require less attention in a course in American History if familiarity with these concepts has already been established than would be the case if it had not; and the converse is equally as probable. Stated in another way, the study of Civics, as far as vocabulary is concerned, can easily be made foundational for the study of American History and, conversely, the study of American History can easily be made foundational for the study of Civics. Finally, it would seem very much worthwhile to have pupils become especially familiar with the 283 words listed above since these words represent the overlapping in the vocabularies of Civics and American History.

[2] The number of different words in the Barr-Gifford list is given as 1899, but the true number is 1891, since each of the following words appear twice: clergy, coinage, destructive, discard, dominion, tradition, sectional, vindictive.

EDITORIALS

THE CASE STUDY METHOD IN EDUCATION

Francis N. Maxfield in a recent issue of the *Educational Research Bulletin* of the Bureau of Educational Research, Ohio State University (March 5, 1930), lays down, in an excellent article on the case method, five criteria for the making of such studies: (1) *completeness,* including a wide range of specific facts; (2) *validity,* the necessity for verifiable facts; (3) *continuity,* the need for data giving longitudinal views as well as cross sections of the matter under investigation; (4) *confidential recordings,* careful records of essential and intimate detail; and (5) *scientific synthesis,* an interpretation of the past and a prediction of the future. The case study is essentially a combination of the causal, historical, and experimental methods of research. As a causal investigation, its chief purpose is the discovery of the circumstances that attend observed shortcomings in individuals, communities, and institutions as an initial step in planning remedial programs. The collection of data indicative of the status of individuals, communities, and institutions, and the conditions under which they work, has been fairly well objectified. There is little likelihood of error among careful workers in the collection of data. There is, however, in each case study an inference of relationship between the observed shortcomings on the one hand, and the attending conditions on the other that is not objective, but dependent upon the experience, training, and good judgment of the analyst and subject to error. The validity of the inference of relationship depends upon chance and the expertness of the one making the inference. Thus the advantage of being well informed. The final test of the validity of the inference is the effect produced by the removal of the attending circumstance. Thus an investigation which started as a causal investigation became an experimental investigation. When the several guesses, the experiments, and their effects are reviewed retrospectively as events which have taken place in the past, the review becomes a case history. The case method is thus causal, historical, and experimental. But the point that the writer wishes to make here is that the whole procedure

demands intelligence, that it is not rigidly objective, and that the essence of the case method is not in the collection of objective data (this is assumed), but in the inference of relationship, and that this is a matter that depends upon the training, experience, and good judgment of the analyst.

In the above discussion, the case study method has been viewed from the point of view of its efficacy in furnishing remedial programs for individual situations. Besides furnishing interesting facts about individuals, communities, and institutions, and their response to treatment, case studies, taken individually and collectively, furnish the raw materials for generalizations about methods of treating other cases. The searching for observable likenesses and differences among the best and poorest individuals, communities, or institutions should, with the multiplication of instances, lead to new evidence about the circumstances that most frequently attend various difficulties, deficiencies, and shortcomings. The history of the experimental attempts to apply remedial programs on the basis of such evidence should lead to new facts and principles of procedure. The case study method may thus become a means of discovering the more generally recurring facts as well as discovering individual facts. As a method of research it is usually referred to by educationalists as a *causal investigation* and by logicians as an application of the *method of agreement*. This application of the case method would seem quite as useful as the first, although frequently overlooked.

The point of this editorial is only this: To many persons case studies seem to mean merely the stringing together of facts, objective and otherwise; they miss the fundamental character and contribution of the case study method to education through its continuity with human life.

A. S. B.

THE TOWER OF BABEL

If an observer of nature looks closely at the confusion and flurry in a disturbed ant hill, he sees a picture of education attempting to adjust itself to a newer order of things. Every member is rushing pell-mell to some place of imagined safety carrying along, if possible, his most precious burden of educational theories, philosophies, projects, and hobbies. The figure soon ends; educational order and peace are not quickly restored; in fact confusion continues to reign. On the con-

structive side it should be remembered that confusion and unrest stimulate new activity and progress. Some of the chaotic and irritating forces deserve careful analysis and study.

Alibis and credits first attract our attention. We eagerly accredit ourselves with all of the obviously good points in the changes although the major force may be very indirectly related to us. Blame for the odium of the unfavorable trends is flung at the agencies which seem to be in opposition to the grand sweep of new educational fashion. Charges and counter charges are more or less futile, for the forces bringing about changes are evidently interwoven in a hopelessly complicated manner.

Let us consider a concrete example. The phenomenal growth in the last decade of the enrollment in secondary education serves as a good case. Some authorities claim that the impetus of the World War is the chief cause, others that the alarming state of illiteracy disclosed in the War was the motive; the sociologist points with pride to the wealth and leisure of our country as the chief stimulant to secondary education; the school administrator proudly suggests the greater attractiveness of modern secondary education; and the psychologist emphasizes that less failure and retardation of slow pupils in elementary schools had swelled the high-school attendance. All of these forces and many others have undoubtedly played their part in the present increase. Is any one of them wholly responsible?

The congestion in secondary education has produced some complicated and acute situations whose solution is intricate. First, there is the taxpayer, unaware of the increased enrolment in the upper grades, who shouts about educational extravagance and, in his attack on the problem, embarrasses the school administration. Crowded classes and shortened programs harass teachers, pupils, and parents alike. Inadequate provision for the average and slow pupil by a curriculum that was developed and designed for a highly selected group, not only renders instruction inaffective but also promotes discouragement and delinquency upon the new type of high-school pupil. Is any one force to be blamed?

In understanding the individual pupil the problems are equally complex. The pupil who is apparently backward may be suffering from some undiscovered physical or sensory handicap; another, who seems to lack in social qualities, may be pre-psychopathic; the truant may be helping with an acute situation at home. Conscientious teachers have sometimes given up in despair and decided that they were complete

failures in trying to handle conditions and factors which were quite beyond their control.

These situations are but examples of the exceedingly complex nature of modern education. How are they to be met? The teacher must maintain a sane balance between narrow training for a limited field of specialization and a broad training to appreciate the meaning of the entire educational program. The administrator must weigh the welfare of his educational policy against the financial resources of his community; he must also seek a balance between knowledge of infinite detail in administration and the evils of delegating too much responsibility to his staff. The reformer in education must study not only his problem of reform but how it will probably spread out and influence other forces. The ant hill will continue to seethe, but whoever wants to join in the activity cannot be too narrow nor too provincial, because too much damage has already been done by these tendencies.

HARRY J. BAKER.

REVIEWS

Address all communications relative to book reviews to Editor E. J. Ashbaugh, Miami University, Oxford, Ohio.

HOLY, T. C. *Survey of Education in Virginia, Volume IV.* Charleston, West Virginia: State Department of Education, 1929. ix + 123 pp.

An emotional shibboleth for the school plant was set up during the latter part of the nineteenth century when President Garfield said that Mark Hopkins on one end of a log and a student on the other constituted a university. In an address entitled, "Brains vs. Brick and Mortar," delivered before the National Education Association, he lamented the tendency toward the expenditure of so much public money on school buildings.

Twentieth century educators have quite generally overthrown most of the nineteenth century norms of education which were built solely on colorful opinion or emotional oratory and have supplanted them with modern standards based on objective measurement. Comes now Dr. Thomas C. Holy of Ohio State University, who shows by means of a scientific technique, how efficiency of schools and caliber of school buildings go hand in hand.

The State Department of Education of West Virginia had objectively ranked the fifty-five counties of the state according to quality of their schools, using the Ayres method of ranking. When the staff of the West Virginia Survey of Education had completed its investigation of school buildings, it was possible to rank the same counties according to their number of E-type, or non-fireproof frame school buildings.

Then the coefficient of correlation between quality of school and type of building was computed and found to be $+.66 \pm .053$. In the words of Dr. Holy, author of Volume III of the survey report, "In view of the type of measurement used, this is a very significant relationship."

Whether this relationship is causal or not, at least it is concomitant. Progressive communities tend to have both good schools and good buildings—and President Garfield's error arose from making them mutually exclusive, that is, Brains versus Brick and Mortar.

Volume III is an extraordinarily comprehensive school building survey report. It is futile to attempt to enumerate even the major studies undertaken and reported on. Two features catch the attenion, however, namely, the chapter on seating and the chapter on the survey and progress for the city of Charleston.

(1) Dr. H. E. Bennett, author of "School Posture and Seating," directed the survey of seating. This is the second school plant survey in which this subject figures prominently.[1] Judging from the findings in these two instances the adequacy of seating facilities will have to be considered in the agenda of future school plant surveys.

Briefly, Dr. Bennett's findings at Charleston were:

[1] The first is the Grand Rapids Survey.

1. About 75 percent of all seats were too high.
2. Eighty-seven percent of the elementary school desks were too high.
3. Thirty percent of the desks were too deep.
4. Seats were incorrectly placed in relation to the desks in 23 percent of the cases.
5. Practically none of the desks provided lumbar back support.
6. Fifty-one percent of the pupils studied had faulty posture, with increasing "badness" in the upper grades.
7. Fifty-three percent of the elementary school desks were loose from the floor, 36 percent of the desks had noisy hinges, and 13 percent of the desks had loose hinges.
8. Nearly all of the seats were stationary, hence the situation was not readily remediable.

(2) Charleston was given an analytical survey of its school plant which unquestionably was worth thousands of dollars to that city. The survey staff evaluated the existing buildings, determined what the ultimate plant will be, and made positive recommendations which should provide reliable data for the support of policies of Charleston school officials for many years to come. Financial ability to push the recommended program is well determined. Dr. Holy is especially qualified for this phase of the survey through his experience on the staff of the Iowa Educational Finance Inquiry.

One incident in connection with the Charleston survey is interesting. In planning the "ultimate" school plant, it was necessary to predict the city population up to 1950. Four methods, more or less ingenious, were used. One of these methods produced an estimated 1950 population of 187,711; the second 176,270; the third 117,600; and the fourth method estimated only 57,441. Thus the first method produced an estimate of 130,270 more persons than the fourth. The survey report calls attention to this wide variation, yet the final figure used was an average of the four. Isn't this akin to the situation where the plump lady with a box of candy before her says, "I know I shouldn't eat this," but does it anyway! Even the highly-trained efficiency experts—doctors of philosophy, if you please—exhibit this very human trait.

A certain graduate student used to lament the formalism of thesis writing. He vowed that if William Shakespeare were a graduate student working for a degree in English in a typical modern university, and he had gathered together his complete works, placed a cover on them entitled, "Submitted in Partial Fulfillment of the Rrequirements, etc.," and turned it in to the dean of the graduate college, he would probably be flunked for failure to state what the problem was, how the data were collected, which research method was used, what the findings and implications of the study were, which subsidiary problems were still unsolved, and what bibliography covered the field. This graduate student will find the same formalism, the unmistakable thesis flavor, in Volume III.

In the opinion of the reviewer, the West Virginia School Building Survey Report is unsurpassed. It is comprehensive, thorough, and scientific. The graduate student and college professor of educational administration will probably use it as a text. Superintendents of schools who are sufficiently motivated by an oncoming building program, will study it with great profit. It is a real contribution to the education of its field. Yet to the average student of education who wishes to read interesting reports to enable him to keep abreast of his profession, and

who takes Volume III from the library and goes home some evening expecting a reading treat—well, it's just too bad—for he is really going to have to *study*.

DON C. ROGERS
Director, Bureau of Building Survey, Chicago Public Schools

KNOWLTON, DANIEL C., AND TILTON, J. WARREN. *Motion Pictures in History Teaching.* New Haven, Connecticut: Yale University Press, 1929. x + 182 pp.

The experiment described in this book was carried forward by Professors Knowlton and Tilton during the school year of 1927-28 in the seventh grade of Troup Junior High School, New Haven, Connecticut. The purpose of the experiment was to determine the contributions of *The Chronicles of American Photoplays* to history teaching in the junior high school. Specifically, the attempt was made to discover the contributions of photoplays to enrichment, retention, and the creation of interest in six sections of American history in Grade VII in the junior high school mentioned above.

In brief, the plan of the experiment was as follows: Six of the fifteen sections in American history in Grade VII were selected for the experiment, while the rest of the sections were the control sections. In these sections certain units of American history were taught in about the same way that they were taught in the nine control sections, with the exception that photoplays were used systematically in the experimental groups and omitted in the control groups. In order to supply information included in the photoplays to the control groups they were supplied with reading material which contained this information. Both groups covered five instructional units in American history prior to 1783. A total of eleven photoplays were used in connection with the teaching of these units in the experimental sections. No photoplays were used in connection with any unit taught in the control groups.

To measure enrichment five objective tests were used in all sections. Those tests aimed to measure the ability of the pupils to deal with concepts of time, place, person, interaction of events, and the interplay of forces. Standardized progress was determined by using the *Van Wagenen American History Information Scale C-2* in all sections before and after the experimental teaching. Interest was measured by trained observers including one of the authors of the report, who kept a record of pupil participation in eight classes during the entire period covered by the experiment. The results secured through the application of these measurements are both interesting and valuable.

With respect to enrichment which was measured by means of five objective tests, the gain of the experimental groups exceeded the gain of the control groups by 19 percent. The gain of the experimental groups concerned causal relationships, persons, and places. With respect to time knowledge the control groups exceeded the experimental ones. Other results briefly stated were: (1) The progress of the experimental groups measured by the *Van Wagenen History Scale, Information C-2* was slightly greater than that made by the control groups; (2) In pupil participation in the classroom activities the experimental groups had an excess of 10 percent over the control groups; and (3) More reading of supplementary history material under controlled classroom conditions was done by the experimental groups than by the control groups. It should be said in conclusion that the seeing of photoplays did

not cause pupils to like history better than other subjects; nor did it cause them to read more history under uncontrolled conditions.

Professors Knowlton and Tilton deserve much commendation for their painstaking care throughout the experiment. There is evidence of the scientific spirit on every page. They are willing to let statistics tell the tale. There is no evidence that they were at all interested in the way the experiment was going to end. To say, however, that the scientific spirit thoroughly pervaded the entire experiment does not necessarily mean that the experiment itself was thoroughly scientific. Of necessity it had to make use of many things that have never been objectively determined. For example, the reliability of the tests used, the worthwhileness of the ends sought, and the value of the methods employed.

R. M. TRYON

University of Chicago

BROENING, ANGELA MARIE. *Developing Appreciation Through Teaching Literature.* Baltimore: Johns Hopkins University, 1929. ix + 118 pp.

In this study Dr. Broening reports upon the objectives, techniques, and results of a five months' experimental study to determine to what extent appreciation may be developed through teaching literature. The "Equivalent-Group Method" was employed with 458 Baltimore and Philadelphia fourth, fifth, and sixth grade public school pupils.

In determining upon the standards for judging the growth of appreciation, the author supplemented her own background of study and experience with the judgments of recognized educational experts in the fields of theory, subject matter, and practice, and further supplemented it by the points of view of hundreds of classroom teachers of literature. The criteria which she set up for the measurement of growth in literature appreciation were as follows: (1) ability to select superior versions; (2) sensitivity to literary merit; (3) amount of reading done; (4) range of literary types selected, read, and enjoyed; (5) ability to utilize community agencies for developing appreciation and conversely to control the influence on oneself of those agencies which distract from developing appreciation; (6) attitude toward reading as an avocational pursuit; (7) sensitivity to the marginal meaning of words; (8) ability in silent reading; and (9) ability to do creative thinking and writing.

The methods of teaching literature which she employed during her five months' period of experimentation are set forth in Chapter III by detailed descriptions of four large units about which varied literary experiences developed. This chapter is suggestive for teachers and supervisors.

In measuring appreciation Dr. Broening borrowed the "spoiled versions" test technique from Abbott and Trabue. These tests were made by diminishing or completely annulling certain characteristic merits of literary selections for the purpose of providing inferior versions. Such tests were given at the beginning of the experiment and again at the end of five months of skillful teaching of literature. They are included in the appendix.

As a result of her study she arrived at a number of conclusions chief among which are the following numbered as they occur in her summarization:

"(1) That literary appreciation can be measured quantitatively and qualitatively.

(2) That appreciation of literature can be developed by the application of the experimental factor.

(3) That the opinions of experts, in the field of education and of literature, as to the nature of literary appreciation and its development are substantiated by the objective evidence gathered under test-controlled situations.

* * * * * *

(10) That it is the obligation of instructors in methods courses in the teaching of children's literature and the makers of courses of study to provide teachers with sources of materials and suggestions, based on experience in teaching, as to ways of presenting these materials so that children will grow in ability to develop appreciation of literature."

Dr. Broening's study will be helpful to others interested in developing and measuring growth of literary appreciation, and consoling to those who have little desire to measure this element objectively, for following the conclusions of her study she states, "Those who teach literature with the flare of the 'passionate few' get as good results as these even though they do not annoy themselves with keeping tedious records."

AMY BRONSKY
Ohio State University

GERMANE, CHARLES E., AND EDITH C. *Character Education.* New York: Silver, Burdette & Co. 1929. xviii + 483 pp.

This book is divided into two parts; how the school can build character is the problem of part one, and how the school and home can coöperate, of part two.

The book is the outgrowth of a series of experiments by the authors carried out in sixteen cities and thirty-one rural communities, with 915 teachers and 5463 parents coöperating.

Has learning success or learning failure anything to do with character building? When a teacher observes the basic laws of learning is she contributing to the moral education of her pupils? When she makes assignments is she doing something which affects her children's character? Of course; and the authors show us how in a very convincing way.

Then the authors devote a hundred and fifty pages to the case study method of handling instances of maladjustments as a means of cultivating growth in character. This section is very concrete, and very usable; it will delight the classroom teacher as there is nothing else like it anywhere. In this section are discussed the relation of the case study method to character building, significant facts revealed by the case study, and comments by teachers on case studies.

Another large section deals with the problems and possibilities of setting up democracies in the school in relation to character growth. Pupil participation and home room organization are discussed at length with many concrete illustrations derived from actual school situations.

It is in part two that the authors have made, perhaps, their biggest contribution. It is, in itself, a good sized volume on parent education and school-home coöperation. The two great needs of parents are a knowledge of child nature and appreciation of the influence of environment upon the child's life. Among the things discussed are: undesirable habits of children and their causes, effect of suggestion and imitation, self denial, effect of failure upon the formation of character, effect of social environment, effect of physical conditions, problems of adolescence, coercion and correction of faults in children, the home as the cradle of democracy, teaching responsibility in the home, parents' comradeship with chil-

dren, and good reading and music in the home. At the end of each section is a well-selected bibliography.

In both parts of the book the authors have given a large amount of space to present successes and failures in relation to future failures and successes in learning and behavior attitudes. To the reviewer their viewpoint seems very sound and their presentation very practical and convincing.

In these days when self-expression seems to be about the whole concern in home education, and inhibition and regard for others' rights seem generally to be ignored, the authors' point of view on coercion is outstanding.

"When shall we spank children? Generally speaking, if one must resort to corporal punishment, let him use it on the child before he is old enough to discriminate between the justice or injustice of the punishment. In these early years the child thinks of the punishment as the direct result of his misbehavior. . . . If a very young child's hands are smartly slapped when he tries to turn on the gas, he associates the pain with the stove and thinks of the slap as being the direct, just outcome of touching the stove, and thus learns to leave it alone. If we would do most of our spanking before the child is five years of age, there would be need of little thereafter. It is during these years that associations are readily made. If the child's hands are slapped when he touches certain pieces of furniture, valuable pottery, china or ornaments, he soon learns to leave them alone. . . .

"Considering the practices in the home and the school as a whole, it would seem that coercion probably fails more often than it succeeds in building permanent desirable character traits. In short, coercion is, as a rule, a poor way of getting things done. In most instances, especially if the children are over four or five years of age, we ought to confess failure when we have to resort to coercion. With children who are old enough to reason, it should be used only to arrest them in some vicious practice or to help them over the first unattractive features of a new undertaking."

This book properly is meant for parents as well as teachers. Teachers who read part two as well as part one will see their wider opportunities, and parents who read all the book ought to grow more skillful in furthering the successes of their children at school, and the family's happiness at home.

It is an excellent book for a study group, particularly in parent-teacher circles, although to the average parent the volume may seem a little too formidable to attack. The more intelligent and well educated parent will "eat" it up. We who give courses to parents in colleges or universities welcome "Character Education" with open arms, and shall long be grateful to the two Germanes. Certainly this is by far the best book available on this subject.

GARRY CLEVELAND MYERS
Western Reserve University

HORRIGAN, OLIVE K. *Creative Activities For Physical Education.* New York City; A. S. Barnes. xi + 142 pp.

Realizing that changing modes of education necessitate the solution of many problems, Miss Horrigan sets out to solve the problem of correlating physical education with other school subjects. It will be an invaluable aid to those who teach physical education and will serve admirably as a handbook to the classroom teacher.

Here, physical education is discussed as a subject of real importance in the curriculum,—a subject that dovetails nicely with the others. To many teach-

ers who have never tried stimulating the interest in a history or a geography lesson by teaching an appropriate dance or game, a pleasant experience is waiting. What better way have we of teaching our children of the activities and customs of other lands and peoples than by teaching them the games and dances of that country? Miss Horrigan gives practical suggestions for the correlation of physical education with the various subjects in the curriculum.

Those of us who are constantly seeking new material will be glad to read this book. There are splendid ideas for original dances by the children in the chapter "The Development of Creative Activities" with the names of the various musical selections as well as the numbers of various victrola records for rhythm work.

The idea of accompanying poems with rhythmic activities is not really a new idea in the "world of dance." But there are few teachers who have had the courage, or initiative, to try it in a schoolroom. Of course, many Mother Goose rhymes have long been used in this fashion. The poems Miss Horrigan suggests, however, are poems of a different nature. To use a poem for action it should, of course, have rhythm. Then it should be a poem that may be dramatized or interpreted. We have various poems suggested by the author as well as the method and procedure of teaching such activities. "Creative Activities" does not suffer the common fault of many books of this type, i.e., lack of definite material. Here we have material set forth in usable form. There are poems suggested for development by interpretive activity. James Whitcomb Riley's "A Masque of the Seasons" is very nicely worked out. With as many concrete examples as are contained in this book the classroom teacher or teacher of physical education could easily build up a delightful program along these lines.

A large share of the book is devoted to games and dances of various ages and countries. Here is a wealth of new Indian material. The author acknowledges the permission of the Bureau of American Ethnology for the adaptation for modern use of the games and dances found in Stuart Culin's 24th Annual Report of the Bureau. There are Grecian games with Grecian history suggested for out-of-door correlation. The Middle Ages are not slighted, since many games and dances belonging to this period and well beloved by children are offered. In the chapter dealing with an International Dance Program the material, while not startlingly new, is worthwhile, well arranged, with the music given. The last chapter of the book deals with "unique games of various countries" and is followed by a bibliography which may be used by the person seeking amplification of the material contained in the book.

This book will fill a much felt need. Classroom teachers as well as teachers of physical education will be wise to add it to their school book shelf.

Miami University ELIZABETH B. COLE

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A bulletin setting forth the cardinal objectives in elementary education with a series of reports by classroom teachers illustrating ways and means of attaining these objectives. According to this report, prepared by the Committee on Elementary Education of the New York Council of Superintendents, it is the function of the public elementary school to help the child to: (1) understand and practise desirable social relationships; (2) discover and develop his own desirable individual aptitudes; (3) cultivate the habit of critical thinking; (4) appreciate and desire worthwhile activities; (5) gain command of the common integrating knowledge and skills; and (6) develop a sound body and normal mental attitudes.

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accomplishment in a particular school subject, and intelligence are distinctly separate traits. The author furnishes further data relative to the conditions under which the achievement quotient may be used.

ROSE, MARY SWARTZ. "A Five-Year Study of Nutrition Teaching in the Fifth and Sixth Grades," *Teachers College Record*, XXXI (May, 1930), 733-754.

A description of the program of nutritional teaching in the fifth and sixth grades of Public School 157, Manhattan.

RUGG, EARLE U. "What Educational Terminology Should a Beginning Teacher Know?", *Educational Administration and Supervision*, XVI, (March, 1930), 187-195.

A tabulation of the educational concepts in five "introductions" to education, and a sampling of eleven educational periodicals, with tables giving the ratings of the concepts found.

WOELLNER, R. C., AND LYMAN, R. L. "Evaluating Books on Vocational Guidance," *The School Review*, XXXVIII, (March, 1930), 191-199.

This article lists 26 commonly used books on vocational guidance with a score card for estimating the value of vocational books and a summary rating of each book.

NEW TESTS

BAKER, HARRY J. *Telling What I Do* (Bloomington, Illinois: Public School Publishing Company, 1930).

This "Telling What I Do" test measures tendencies in behavior by sampling the behavior which is actually taking place. Each exercise has three answers: one that is quite ideal; a second of neutral or doubtful importance; and a third of relative undesirableness. The test is furnished in both Primary and Advanced forms.

GUY, J. FREEMAN. *Guy Spelling Scales* (Bloomington, Illinois: Public School Publishing Company, 1930).

These new spelling scales are designed for grades 2A to 9A, inclusive. Three forms of testing are included in a single folder.

PRESSEY, S. L., AND L. C. *Pressey First-Grade Word Reading Test* (Bloomington, Illinois: Public School Publishing Company, 1930).

This new test replaces the Pressey First-Grade Attainment Scale in Reading; it is for use at the end of both the first and second semesters of the first grade, and covers word recognition only. It is given in two forms: Form A for first testing, and Form B for second testing.

WILLIAMS, ALLAN J. "Williams Reading Test for Grades 3 to 9," published by Public School Publishing Company, Bloomington, Illinois, 1929.

There are two forms of this test with 55 questions each. The forms may be given jointly or separately.

The Institute of the Leipziger Lehrervereins announces for 1929, in *Pädagogisch-Psychologische Arbeiten aus dem Institut des Leipziger Lehrervereins*, Leipzig, 1929, XVII, 272-289, the following new German test material. (These tests can be purchased from the Institut of the Leipziger

Lehrerverein: Leipzig C1, Kramerstr. 411.)

A Picture Test, by Felix Schlotte, (272-274), consists of a series of picture-sheets, each sheet presenting in sub-picture a story which the child is asked to write down.

Picture Tests with Absurdities, by Felix Schlotte (275-277), is of the non-language intelligence test type. The child is to find the mistakes in the picture (such as shadow on the wrong side of building, etc.). This test gave correlations of .59 and .66 with teachers' estimates of intelligence.

A Gap-Sentence Test, by Felix Schlotte (277-280), is a completion test type. The material is not a coherent story, but consists of single sentences of unrelated content arranged in increasing difficulty.

A Logical Gap Test, by Walther Schubert (280-282), is a completion test the purpose of which is to test ability to find the logical connection between sentences and parts of sentences.

A Grammatical Test, by Walther Schubert (283-285), is designed to find out to what extent children master German grammar. A story is presented with common grammatical errors. Children are asked to make the proper corrections.

A Grammatical Gap-Test, by Walther Schubert (285-287), determines the degree of mastery of German grammar, especially of more difficult forms of conjugation and declension. A coherent story is presented wherein the grammatical parts have to be filled in.

Conjunction-Test, by Walther Schubert (287-289), tests logical understanding by having the children fill in the proper conjunctions.

STATISTICS

JACKSON, DUNHAM. "Statistical Applications of Elementary Mathematics," *School Science and Mathematics,* XXX, (March, 1930), 247-253.

A number of illustrations are given indicating the statistical applications of elementary mathematics.

TRYON, ROBERT CHOATE. "The Reliability Coefficient as a Percent, with Application to Correlation between Abilities," *Psychological Review,* XXXVII, (March, 1930), 140-157.

A statistical article in which the reliability coefficient is interpreted as a percent.

WILSON, EDWIN B. "Mathematics and Statistics," *Journal of the American Statistical Association,* XXV, (March, 1930), 1-8.

A discussion of mathematical inaccuracies in statistics, calling attention to serious errors in the field of applied mathematics.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Editor Carter V. Good, School of Education, Miami University, Oxford, Ohio.

The fourth annual Iowa State Conference on Child Development and Parent Education will convene at Iowa City, Iowa, on Tuesday, Wednesday and Thursday, June 17, 18, and 19, 1930, under the auspices of the Iowa Council for Child Study and Parent Education. Iowa State Teachers College, the Extension Divisions of Iowa State College and the State University of Iowa, and the Iowa Child Welfare Research Station coöperate in the meetings.

The conference is open to all who desire to come. In past years parents, teachers, nurses, social workers, physicians, religious workers, settlement house directors, journalists, and research workers have attended.

Lectures will include the need for parent education, aspects of mental hygiene, religion in the home, and sex education.

A special session will be devoted to methods and technics in parent education.

Speakers at the conference will include: Mrs. Sidoney M. Gruenberg, director of the Child Study Association of America, and consultant in parent education at Teachers College, Columbia University; Dr. Esther L. Richards, associate professor of psychiatry at Johns Hopkins University; Dr. C. M. Hincks, chairman of the Medical Division of the Canadian National Committee for Mental Hygiene; and Dr. M. Willard Lampe, director of the School of Religion at the State University of Iowa.

The Smith College School for Social Work announces a quarterly publication, *The Smith College Studies in Social Work*, the first number of which will appear about October 1, 1930. Professor Everett Kimball, the Director of the School, and Dr. Helen Leland Witmer, the Director of Research, will act as editors. The subscription price will be two dollars a year.

Among the summer conferences that promise to be of educational significance is the "Institute on the Higher Education of Women" called to convene at Alabama College, the State College for Women, at Montevallo, Ala., June 19-21.

In view of the phenomenal development in the past few years of programs of higher education for women, President C. C. Carmichael of Alabama College, who has called the conference, believes that such an institute is timely and should be of interest to educators throughout the country, whether directly concerned with colleges for women or for women and men, or whether in the general field of education.

The program as announced by President Carmichael has been designed to cover three divisions of discussion: "General," which will present a survey of the contribution of women's colleges and of coeducation; "New College Programs," which will offer a discussion of experiments in women's education such as are now being conducted

at Vassar and Smith Colleges; and "The New Curriculum," a discussion of subjects in the broad field of human science which are gradually being injected into the liberal arts program of colleges where women are in attendance.

Following this, there will be an attempt to show what should be the professional objectives in higher education for women, what are the needs for professional training, and in how far professional objectives should obtain in the liberal arts college.

The *Journal of Geography* announces an interesting series of articles which will deal with the relation of man to his natural environment. As Dr. George J. Miller states:

"Most geographers agree that the central theme of geography deals with the relation of man to his natural environment. But in their writings they have tended to make environment the prominent feature and relegate man to a secondary position. Explanations of geologic, meteorologic, climatic, physiographic, and other features, have been made part of the discussion as if such explanations were an integral part of geography as defined. Also, even when explanations were minimized, it has been common practice to introduce a subject by an extended discussion of the natural environment giving the discussion a very strong geologic and physiographic flavor.

"The *Journal of Geography* is concerned primarily with geographic education rather than the abstract science of geography. It is interested in the possible preparation of material along new lines for educational use, especially for use below college level where most teachers have had little training in geography. Accordingly a plan was presented to numerous geographers throughout the country, and they immediately expressed their willingness to try it. Each author is free to select a region and develop the theme as he chooses. This will result in considerable variety of treatment and present many standards that may serve as guides in the future preparation of geographic material for educational purposes."

The proposed series of articles purposes to weave human activities into the natural setting so that (1) man will occupy the prominent place in the discussion; (2) a clear picture of both the natural setting and man's occupancy will result; and (3) there will be shown clearly a causal relation between the two elements, natural environment and man.

Among the contributors to the series are the following:

Dr. A. E. Parkins, George Peabody College for Teachers. "The High Plains of Western Texas," which appears in the January issue. Later Dr. Parkins will present an article on some unit area in the South.

Dr. Derwent Whittlesey, Department of Geography and Geology, Harvard University, "Human Occupance of the Lowest Rhineland."

Dr. D. H. Davis, Department of Geography, University of Minnesota, "A Study of the Succession of Human Activities in the Kentucky Mountains."

Dr. Langdon White, Department of Geography, Randolph-Macon Woman's College, "The Shenandoah Valley."

Dr. W. H. Haas, Department of Geography and Geology, Northwestern University. His articles will deal with the Incas of Peru.

Dr. Preston E. James, Department of Geography, University of Michigan, will discuss human life on the southern margin of the Sahara.

Professor Harold C. Kemp, Department of Geography, Dartmouth College. Which one of several themes will be submitted

finally has not been determined definitely.

Dr. Elmer Ekblaw, Department of Geography, Clark University, will prepare from one to three articles dealing with Arctic lands.

Professor R. H. Whitebeck, Department of Geography, University of Wisconsin, will discuss an area in Middle America.

Miss Floy Hurlbut, University of Nebraska, will discuss life relations in Fukein Province, China.

Dr. Clarence Jones, Department of Geography, Clark University, will present at least two articles dealing with the banana and coffee industries of Colombia.

Dr. Ralph H. Brown, Department of Geography, University of Minnesota, will discuss the geography of a mining area in the Front Range of the Rockies in Colorado.

Dr. Samuel Van Valkenburg, Department of Geography, College of the City of Detroit, will discuss one or more tropical areas.

Dr. William T. Chambers, Department of Geography, Stephen F. Austin State Teachers College, Nacogdoches, Texas, will discuss a rural cotton community.

The State of Ohio has inaugurated a State Scholarship contest. The first elimination contest will be held in each county and the district contest will be held at and with the coöperation of the five state teacher training institutions under the direction of the State Department of Education. The contest promises to be a continuation of the Every Pupil Test which was held on December 10, 1929, and was reported very fully in a bulletin of the State Department. This bulletin gives the distribution of the high, median, and low grades in the various subjects tested and also presents percentile distributions. Analyses of errors are also given. These should prove of interest to teachers, since they show the points at which pupils fail.

In preparation for the state contest, syllabi have been prepared in Algebra, Chemistry, English Composition, French, History, Latin, and Physics. Each syllabus shows the field that will be covered by the test and thus furnishes a guide for the teachers in preparing the pupils.

The announcements regarding the contests state that while the mastery of subject matter will be an important consideration, eligibility is not based on academic achievement alone. The rules for eligibility stress the fact that behavior, attitude, ideas, and ideals should be considered by the local school in picking its representatives.

AN APPRAISAL OF ADULT EDUCATION

The education of adults has been receiving attention in the city of Cleveland for the past eighty years. The seventy-ninth annual report issued by the division of Adult Education is a 95 page mimeographed bulletin which deserves careful reading and a wide circulation. In this report Mr. Grace, the director of the division, discusses the philosophy of adult education, reviews the history of the movement in Cleveland, analyzes the budget, tells what the program is, shows how he and his assistants spend their time, explains the benefits of such education, and forecasts the future. Since the last chapter is a summary as well as a forecast it is quoted almost in its entirety.

What does the future hold? What will be the status of Adult Education ten years hence? What will be the direction in which the program is most likely to move?

From the evidence presented in this respect and some speculation, it is the

belief of this division that within the next ten years the following events will have taken place:

I. There will be more adults registered for evening courses under the direction of the Board of Education than there will be students enrolled in the regular senior high schools of this city.

II. There will be more adults attending and graduating from Cleveland Extension High School for Adults than there will be from any single senior high school for boys and girls in this city.

III. There will be more adults participating in the program for purely cultural reasons than from vocational motives. The changes in our economic order are to be so radical, so rapid, so intolerant during this next period, that men are going to say, "Well, if I can't get rich, I can get some of those things out of life that beget happiness and contentment."

IV. Compulsory attendance laws will have been modified. Children will enter into the work of the world earlier. Whether or not an individual will be compelled to attend school will depend upon his ability to assimilate the educational process and the ability of the educational process to adjust him to the social order. The test for participation in the educational program will not be chronological age but ability to profit by this experience.

V. There will be greater coöperation between the elementary schools of the public school system and adult education. More and more the day school principal and teacher realize that many of the problems of education are problems involving parents, and that the quality of raw material brought into the school is not better or worse than the homes in that community. Much of the idealism and educational philosophy of this day will have been transferred into actualities. In other words, the adult education program will develop side by side with the day school program, the one being concerned with children and their destinies and the other with the parents of these children.

VI. The time will come within ten years when teacher-training institutions will require that every prospective teacher shall have had the experience of having taught, for one semester, a class of adults.

VII. The educational system will gradually recognize the fact that credits, honor points, salary increases, diplomas, honor societies are evidences of schooling, and not education. Adults in the formal courses are so busy doing the manual labor connected with a course that they have little time to think and less time to satisfy any of their intellectual interests, and surely much less time to enjoy study. . . . A great teacher superimposes his own character on his group and not a mass of material, rules, and restrictions that submerge the most important element in the whole educational process, namely, the ability of teachers to help individuals to help themselves and to take pleasure in the process. The human element just cannot be left out of education if, at the same time, we expect a competent product to result.

VIII. We will have recognized the necessity of preserving the cultural treasures of the national groups in our midst. We will have begun to mold the folk songs, folklore, and character of these people into the ever improving cultural pattern of these United States.

X. There will be fewer classes for non-English speaking adults. Those groups will have become more or less linguistically assimilated, providing that the present immigration law remains in

force, and further, providing that the same large attendance prevails. There is a ten-year program in this field though not another person of foreign birth were to settle in Cleveland. The number of adults in this city still illiterate would occupy the full time of this division for the next five years.

XI. America will have discovered by 1940, ten years hence, that culture evolves in spite of the earnest efforts of many contemporary adult educators and others who at present are busily engaged in elevating the cultural status of this country.

XII. Mass production in education will have passed in ten years. Librarians in adult education will have begun to realize that quantity in circulation is not the sole index of success. The kind of books read, the quality of people doing the reading, the effect on the individual are all factors for consideration. There will be greater freedom in our educational institutions in the direction of "reading according to one's interests."

XIII. Continuing one's education still means to too many educators, more of the same medicine. We will have discovered that the standards of education will not have been badly impaired when adults begin to select the courses, subjects, or curriculum, as one chooses, which best fit their needs and interests.

XIV. The Adult Education program of the future will follow five lines of activity: (1) education which has to do with parental functions; (2) education for the profitable and pleasurable use of leisure; (3) education for constructive citizenship; (4) education for social relationships; and (5) education for survival.